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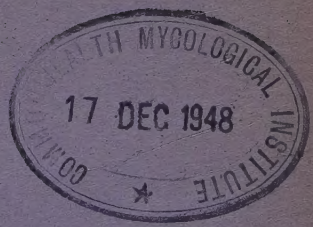

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DISEASES CAUSED BY BACTERIA AND FUNGI

WYSS, O., STONE, W. S., & CLARK, J. B. (1947.) **The production of mutations in *Staphylococcus aureus* by chemical treatment of the substrate.** —*J. Bact.* **54.** 767–772. [Authors' summary amended.] **1940**

These data indicate that treatment of broth with ultraviolet light is not a unique indirect method of inducing mutations. Hydrogen peroxide reacts with some broth components and an increase in mutant forms appears when organisms are grown in medium to which it has been added, although no peroxide remains at the time of inoculation. A similar action occurs with a nitrogen mustard.

KOPYLOV, N., & GINSBURG, N. (1945.) Itogi primeneniya protivosibireyazvennoĭ vaktsiny " STI " (1941–1944 gody). **[Results of experiments with STI anthrax vaccine, 1941.]** —*Veterinariya, Moscow.* No. 6. p. 12. **1941**

This short article summarizes the results of using STI anthrax vaccine on 1,888,422 farm animals. 1,116 of these developed complications, resulting in the death of 322. Only five animals developed anthrax following vaccination.—L. L.

ROSENBERG, V. A., BLAGOVESHCHENSKAYA, G. S., & SHABALINA, E. F. (1945.) Otsenka effektivnosti vaktsiny " STI." **[Effectiveness of STI anthrax vaccine.]**—*Veterinariya, Moscow.* p. 13. Only abst. given. **1942**

7,024 reindeer were vaccinated with anthrax vaccine. Small doses produced no reaction, but doses of 10 ml. caused significant swelling at the site of injection, a slight rise in temperature and slight lameness.

In an addendum, F. K. Borisovich states that 5,325 farm animals were successfully treated with the vaccine. No complications followed and immunity was rapidly acquired.—L. LEVENBOOK.

MYERS, J. A. (1946.) **Bovine tuberculosis—past, present and future.**—*Proc. 50th ann. Meet. U.S. Live Stk sanit. Ass., 1946.* pp. 66–77. **1943**

In this article the tuberculosis problem is reviewed from the veterinary angle. Von Behring's bovovaccination and the elimination of infection in cattle by the tuberculin test are discussed. M. discusses the virulence and typing of strains from human and bovine tuberculosis and postulates that in man the bovine type creates an allergy that sets the stage for a great deal of pulmonary tuberculosis when the individual is exposed to infection with the human type. He suggests that the drop of 68% of pulmonary tuberculosis in man in California may be partly related to the elimination of tuberculosis from cattle. The periodic examination of workers whose employment brings them in contact with cattle is advised.—W. R. KERR.

CECILIA, C. A. (1942.) Los alimentos de origen animal (leche, nata, carne, quesos y huevos), como vectores de la tuberculosis humana. **[Foodstuffs of animal origin (milk, cream, meat, cheese, and eggs) as carriers of tuberculosis.]**—*Trab. Inst. Biol. anim., Madrid.* **7.** 469–489. **1944**

A general survey of the subject, taking into consideration the human, bovine and avian types of tubercle bacillus, with conventional emphasis on the need to control TB. and for improved supervision of foodstuffs of animal origin.—

—R. MACGREGOR.

ROBINSON, E. M. (1944.) **A note on strains of tuberculosis from the Cape Kudu.**—*Onderstepoort J. vet. Sci.* **19.** 23–28. **1945**

The characteristics of six strains of *Mycobact. tuberculosis* isolated from Kudu (*Strepticeros strepticeros*) in 1939 and 1941 are described. The lymph nodes from which the primary isolations were made contained pus of a thick creamy type with no evidence of calcareous material. Five of the strains had a moist type of growth on Dorset's egg medium. The sixth had a dry, crumbly, more profuse growth. Growth of all strains on glycerin-potato was very poor. Virulence tests on g. pigs and rabbits with four strains indicated that all were of bovine type.

In naturally infected Kudu a feature of the

disease was abscess formation in the sub-paratid region.

Attempts were made to reproduce similar lesions artificially in cattle and goats by rubbing infective pus into scarifications on the ears. In some cases large swellings of the lymph nodes with pus formation were produced, in others the lesions were discrete without marked enlargement of the lymph nodes.

Both the cultured characters and the results of inoculation of laboratory animals, cattle and goats indicated that the strains were of the bovine type.—M. C.

BURDON, K. L. (1946.) **Disparity in appearance of true Hansen's bacilli and cultured "Leprosy bacilli" when stained for fat.**—*J. Bact.* **52.** 679–680. **1946**

In studies with B.'s improved fat-staining method for dried preparations applied to various acid-fast bacteria such as human and avian type tubercle bacilli, bacilli of cold-blooded animals and saprophytes, it was found that closely related organisms tended to have a comparable content of fat-staining material. It seemed therefore of interest that eight strains of so-called cultured leprosy bacilli behaved in regard to their fatty material in a manner similar to the bacilli of the cold-blooded animals while true Hansen's bacilli in smears from leprous lesions behaved differently.
—E. KLIENEBERGER-NOBEL.

SVENDSEN, M., AMLIE, R., & HENRIKSEN, S. D. (1947.) **Hemophilic gram-positive rods.**—*J. Bact.* **53.** 755–758. [Authors' summary copied *verbatim.*] **1947**

Two strains of gram-positive rods are described, which grow mainly as satellites around other bacterial colonies on blood agar. Both strains required some growth factor produced by other bacteria in addition to the substances contained in blood agar.

The only strain studied in detail was absolutely dependent upon both the X and V factors of Thjøtta and Avery and, in addition, showed a great preference for media rich in animal protein.

It is suggested that this strain should be classified as a *Corynebacterium*, and, should future investigations justify it, under the specific name *C. hemophilum.*

DRAKE, C. H., & HALL, E. R. (1947.) **The common rat as a source of** *Erysipelothrix rhusiopathiae.*—*Amer. J. publ. Hlth.* **37.** 846–848. **1948**

In the course of a rat survey in south-eastern Washington in which 85 rats were examined, *Erysipelothrix rhusiopathiae* was isolated from one apparently normal rat. Attention is drawn to the possibility that apparently healthy rats may play a part in *Erysipelothrix* infections.—E. K.-N.

DE MOULIN, F. (1947.) Een critische beschouwing over de praktijk der vlekziekte-immunisatie. **[Immunization against swine erysipelas.** *Erysipelothrix rhusiopathiae* **infection.]**—*Tijdschr. Diergeneesk.* **72.** 271–288. [English summary.] **1949**

This is largely a critical review concerning immunization against *Erysipelothrix rhusiopathiae* infection, by a worker at the State Serum Institute, Rotterdam. The author attributes failures to certain factors other than the types of vaccine and serum used—nutritional deficiency in the host, soil factors relating to the incidence of the organism, inefficient vaccination technique—failure to shake culture tubes, the mixing of serum and culture before inoculation and the inoculation of sick animals—the vaccination of pigs at the wrong ages and the wrong time of the year and, finally, the danger inherent in vaccinating pigs of certain graded-up imported breeds. The author gives details of the serum and vaccine prepared and the methods involved for their use.—J. E.

CECILIA, C. A., & DE VERGARA, J. H. C. (1941.) Contribución al estudio del género *Pasteurella* (*Trevisan*). **[A study of the genus** *Pasteurella.*] —*Trab. Inst. Biol. anim., Madrid.* **6.** 59–84. [English and German summaries.] **1950**

The literature dealing with the taxonomy of *Pasteurella spp.* from various domestic animals is discussed. The authors' own work leads to the conclusion that it is not possible to differentiate the various species which are pathogenic for animals and they suggest that such strains be grouped together under the name *P. multiseptica.*
—R. MACGREGOR.

LAZARUS, A. S., & GUNNISON, J. B. (1947.) **The action of** *Pasteurella pestis* **bacteriophage on strains of** *Pasteurella, Salmonella,* **and** *Shigella.* —*J. Bact.* **53.** 705–714. [Authors' summary copied *verbatim.*] **1951**

A strain of *Pasteurella pestis* phage which lysed 12 out of 12 strains of *P. pestis* has been shown to lyse, in varying degree, 19 out of 27 strains of *Pasteurella pseudotuberculosis.* After adaptation to *P. pseudotuberculosis*, the phage lysed all 27 strains of that organism, most of them in higher dilution than originally. Other *Pasteurella* species were not susceptible to either phage.

Three out of 42 *Salmonella* strains and six out of 37 *Shigella* cultures were susceptible to *P. pestis* phage. Seventy-seven cultures from 17 other genera were not affected by the same phage. After adaptation to *Shigella* species, the phage showed an increased potency toward the six susceptible *Shigella* strains. After adaptation to

P. pseudotuberculosis or to *Shigella*, the phage retained completely its ability to lyse *P. pestis*.

Minor serological relationships have been shown by agglutination tests to exist between *P. pestis* and certain strains of *Salmonella* and *Shigella*. These relationships were not clearly correlated with susceptibility to phage.

The significance of these findings is discussed. The use of *P. pestis* lysates as vaccines and the study of the lethal properties of *P. pseudotuberculosis* lysates are suggested as worthy of further investigation.

ROEPKE, R. R., & MERCER, F. E. (1947.) **Lethal and sublethal effects of X-rays on** *Escherichia coli* **as related to the yield of biochemical mutants.**—*J. Bact.* **54.** 731–743. [Authors' summary copied *verbatim*.] **1952**

Suspensions of *Escherichia coli* were irradiated with X-rays under conditions which ensured essentially uniform exposure of the cells. The log of the survival ratio was found to decrease linearly with the time of irradiation, in accordance with the " one-hit-to-kill " theory of the bactericidal effects of X-rays, down to a survival ratio of about 10^{-5}. A deviation from linearity in the initial portion of the death rate curve is considered to be the result of a discrepancy between plate count and the number of viable cells.

With more extensive X-ray treatment the death rate increases, apparently as the result of the cumulative effects of " nonlethal " hits, which render the cells more fragile or more sensitive to environmental conditions. Viable mutations appear to result in an increased sensitivity to such cumulative effects as indicated by the effect of storage of the X-rayed suspensions on the yield of biochemical mutants.

A total of 61 growth-factor-requiring mutant cultures, consisting of at least 29 different strains, were obtained from 4,420 colonies isolated from plates poured shortly after X-ray treatment of resting cell suspensions. No mutants were obtained from 1,091 colonies isolated from plates poured after storage of the X-rayed suspensions at 4°C. for 15 hours to 8 days.

The results of this study illustrate some of the factors to be considered in a quantitative study of X-ray induced mutations or in an attempt to obtain high yields of biochemical mutants.

TATUM, E. L., & LEDERBERG, J. (1947.) **Gene recombination in the bacterium** *Escherichia coli*. —*J. Bact.* **53.** 673–684. [Authors' summary copied *verbatim*.] **1953**

Evidence has been presented for the occurrence of character recombination in the bacterium *Escherichia coli*. This suggests the existence of a sexual phase. Recombinations of genes controlling several growth factor requirements and resistance to a specific bacteriophage have been found.

KAUFFMANN, F., & VAHLNE, G. (1944.) Untersuchungen über H-Antigene der Coli- und Salmonella-Bakterien. **[H antigens of the coli and salmonella bacteria.]**—*Acta path. microbiol. scand.* Suppl. No. 54. pp. 180–182. [In German.] **1954**

Using a culture method which favours the formation of H antigen, the H antigens of *coli* strains isolated from pathological material were analysed. Eighteen different *coli* H antigens, H_1-H_{18}, were established. The sera prepared with these antigens were so specific that absorption tests were not necessary. All the *coli* types examined were monophasic. No antigenic relationships between any of these *coli* strains and salmonella types—including *Bact. coli*—could be found. For the first time positive *coli*-agglutination reactions could be obtained in appendicitis, which seems to support the hypothesis that certain serological *coli* types are prevalent as causative agents of appendicitis or peritonitis.—A. M.-H.

BRUNER, D. W., & EDWARDS, P. R. (1946.) **Salmonellosis of domestic animals.**—*Proc. 50th ann. Meet. U.S. Live Stk sanit. Ass., 1946.* pp. 194–198. **1955**

In 1,289 outbreaks of salmonellosis affecting domestic animals other than poultry 46 *Salmonella* types were found, of which the most frequent were *S. cholerae-suis* and *S. typhi-murium*. Diarrhoea is a common symptom of infection; the condition produced most usually is a septicaemia. *S. abortus-equi* infection is however an exception in this respect. Salmonellosis occurs more often and in a more severe form in young animals than in adults.—A. MAYR-HARTING.

HINSHAW, W. R., & MCNEIL, E. (1947.) **Lizards as carriers of** *Salmonella* **and paracolon bacteria.** —*J. Bact.* **53.** 715–718. [Authors' summary copied *verbatim*.] **1956**

The isolation of *Salmonella rubislaw* (XI : r, enx) is reported from 3 of 12 Pacific fence lizards (*Sceloporus occidentalis-occidentalis*) examined.

From the same group of lizards two sucrose-positive paracolons which have *Salmonella* antigenic components were also isolated. One of these, an anaerogenic type, has the Salmonella type formula VI, VIII, : d, i. . . . The other contains the O factors IV and XII of group B, but no H factors were identified.

Detailed biochemical studies of the paracolon types are given.

HALL, W. J., MACDONALD, A. D., & LEGENHAUSEN, D. H. (1946.) **Studies on the control of fowl typhoid.**—*Proc. 50th ann. Meet. U.S.*

Live Stk sanit. Ass., 1946. pp. 139–150. **1957**

Experiments were carried out to determine the relative importance of various routes of infection in fowl typhoid. 50% of the pullorum positive reactors laid typhoid infected eggs on one or several occasions during the six months period of observation. Such infected eggs when mixed into the mash of chicken food caused outbreaks with a high mortality. Living in a pen previously inhabited by infected birds did not lead to infection; actual contact with infected birds was necessary. Some as yet unknown factor appeared to be necessary for the transmission of infection. The authors emphasize however the importance of eliminating carriers from breeding flocks; carriers may react only intermittently to the agglutination test, so the tests must be made at suitable intervals.—A. MAYR-HARTING.

RICE, C. E. (1947.) **Atypical behaviour of certain avian antisera in complement-fixation tests.**—*Canad. J. comp. Med.* **11.** 236–245. **1958**

Chickens, turkeys, ducks and geese failed to develop significant complement-fixing activity with *S. pullorum* antigen after repeated injections of live cultures of this organism. High agglutinative titres appeared. Pigeons developed higher complement-fixing than agglutinative titres. Anti-pullorum chicken, turkey, duck and goose serum added to antipullorum rabbit, g. pig or pigeon serum, immediately before or after complement and antigen, inhibited the fixation of complement by the latter antigen-antibody systems. Normal sera of these species showed no inhibitory action. The inhibitory activity may be due to a combination of avian antibody with antigen to form aggregates lacking complement-fixing activity. It is suggested that tests for inhibitory activity may be developed into indirect supplementary methods of testing for the presence of antibody in avian and other systems that fail to show reactions in direct complement-fixation tests.—R. GWATKIN.

GRAYSON, A. R. (1947.) **Contagious abortion in cattle—" Strain 19 " vaccination.**—*J. Dep. Agric. Vict.* **45.** 300–302. **1959**

Grayson describes the field trial in Victoria of vaccination against brucellosis in cattle with *Br. abortus* strain 19. Two groups of animals were vaccinated, heifer calves from four to eight months of age and unmated heifers and non-pregnant cows. The vaccination of adult animals was often followed by a local and systemic reaction and vaccination is now confined to heifer calves.

The use of the agglutination test is now confined to areas where testing and vaccination have not previously been carried out. Grayson also describes the method by which veterinarians, lay stock inspectors and farmers have combined to facilitate the vaccination of large numbers of calves. The total number of animals vaccinated each year has increased considerably since the programme began in 1943. A considerable reduction in the number of abortions per year has been reported from herds where vaccination is practised compared with control herds.—D. C. B.

POLTEV, V. I., & KARKADINOVSKAYA, I. A. (1945.) Zhiznesposobnost' brutsell v vode. **[Viability of brucella in water.]**—*Veterinariya, Moscow.* No. 4–5. pp. 39–40. **1960**

In fresh water, *Brucella* organisms retained their viability from a few days to four months and nine days, depending on the temperature, the organic constituents in the water, the concentration of the organisms, and the volume of water used for the experiment.

In sterilized river water at 5°C., 15°C. and 25°C. the organisms remained viable for four months nine days, two months 14 days and one month 21 days respectively.—L. LEVENBOOK.

PUKH. (1945.) Zhiznesposobnost' mikrobov tipa Brucella bovis na skotnom dvore. **[Viability of bovine brucella organisms in cattle yards.]**—*Veterinariya, Moscow.* No. 4–5. pp. 40–41. **1961**

In artificially infected cattle yards, the viability of *Brucella bovis* was found to be as follows:-

in wood scrapings from the cattle sheds, up to four months 13 days, depending on whether or not the selected areas were soiled with a layer of cattle faeces; on adjacent dung-covered ground, exposed to the sun, two weeks; on similar ground shaded from the sun, 34 days.

Difficulties were encountered in obtaining cultures from cattle-yard floors, etc., but the author concluded that in such floors and on walls, the bacteria may remain infective for a maximum of 4–5 months.—L. LEVENBOOK.

ZAMECNIK, P. C., BREWSTER, L. E., & LIPMANN, F. (1947.) **A manometric method for measuring the activity of the *Cl. welchii* lecithinase and a description of certain properties of this enzyme.**—*J. exp. Med.* **85.** 381–394. [Authors' summary copied *verbatim.*] **1962**

A manometric method has been described for measurement of the activity of *Cl. welchii* lecithinase. The method depends on displacement of carbon dioxide from a bicarbonate-carbon dioxide-buffered medium by the phosphorylcholine liberated during the enzymatic hydrolysis.

LAMIKHOV, K. F. (1945.) Opyt ozdorobleniya khozyaistv ot epizooticheskovo limfangoita loshadeĭ. **[An experiment in sanitation in stock**

yards with regard to epizootic lymphangitis in horses.]—*Veterinariya, Moscow.* No. 6. pp. 9–11. **1963**

A large-scale attempt was made to eradicate equine epizootic lymphangitis (*Cryptococcus farciminosis* infection) on a number of farms situated in a heavily infected region.

All horses were examined at five-day intervals, and suspected cases were isolated. These observations were continued for four months after isolation of the last infected horse. Stables housing infected horses were disinfected with hot (85–95°C.) 5% creosote sulphate, at a rate of 1–1·5 l. per sq. m. Any observed skin lesions were treated immediately. Treatment of the disease was attempted by the intravenous injection of various substances. These included novoarsenol, trypanblue, mercury di-iodide, turpentine, trypaflavine, flavacridine, thymol, etc. None of these were effective. Surgical treatment with or without treatment with turpentine is described.—L. L.

ØRSKOV, J. (1942.) **Streptobacillus moniliformis [Actinomyces muris] and the morphology of its variants.**—*Acta path. microbiol. scand.* **19.** 575–585. [In English.] **1964**

The manner in which L organisms arise from *Streptobacillus moniliformis* is described. Three types of colonies can be obtained by spreading a culture on serum or ascitic agar, normal streptobacillus colonies, smaller darker colonies, designated α-colonies, and very small colonies with a dark centre and light periphery, showing the characteristics of L-colonies; these were designated β-colonies. The α-colonies consist of a mixture of elements, twisted threads, that divide up into cocci and fatty spheres. Some of the twisted threads and densely packed cocci grow down into the medium; in this way β-colonies arise. For a short period normal *Streptobacillus* colonies can also be obtained from α-colonies. The β-colonies which are in every respect identical with Klieneberger's L1-colonies, have not a thread stage and only few elements in these colonies are able to germinate. These viable elements are tiny spheres lying in densely entangled bundles. The author denies that there is any resemblance of the L1-organisms to the pleuropneumonia organisms or any other member of the *Micromyces* group. He considers that the L1 organisms are variants of *Streptobacillus moniliformis*.—A. MAYR-HARTING.

MORCOS, Z., ZAKI, O. A., & ZAKI, R. (1946.) **A concise investigation of fowl spirochetosis in Egypt.**—*J. Amer. vet. med. Ass.* **109.** 112–116. **1965**

This article reviews earlier work on fowl spirochaetosis in Egypt, and records the findings of the authors' experimental work. It was found that, after intramuscular injection, geese and ducks developed acute cerebral symptoms, and died in 4–5 days. Turkeys and sparrows developed infection but recovered. Guinea fowl, doves, crows and hawks were refractory, and only one out of eight pigeons became infected.

For maintenance, the keeping of defibrinated, or citrated, blood at 4°C. was found unsatisfactory. The best results were obtained by passage through two months old chicks every three weeks. Chicks were killed two days after infection, the serum stored in the ice chest remaining fully virulent for at least four weeks. If the chicks were allowed to live longer, the spirochaetes did not survive so long in the serum.

For cultivation, rich cultures were obtained by Galloway's method (the medium consisted of coagulated white of egg to which was added diluted rabbit serum after being heated for one hour at 58°C. A drop of sterile fresh rabbit blood was added and a covering of vaseline before inoculation) provided the vaseline was omitted. For treatment myosalvarsan [sulpharsphenamine], 0·01 g. per kg. on two consecutive days, spirocid [acetarsol], 1 g. per kg. on two consecutive days, and atoxyl, 0·06 g. per kg., all proved successful. Arrhenal (disodium methyl arsenate), various sulphonamides and penicillin were unsatisfactory.

Immunization could be effected by the use of vaccines prepared by diluting blood, liver suspension or spleen suspension 1 : 4 in saline, adding 1% phenol, and keeping in the ice chest for ten days before use; or by the use of hyperimmune serum prepared in geese or goats, followed by infected blood on the following day; or by infection followed by treatment with arsenical compounds. Hyperimmune goat or goose serum had no value in treatment.—U. F. RICHARDSON.

KERVRAN, P. (1947.) Recherches sur la sensibilité du poulet à *Spirochaeta duttoni.* Absence d'immunité de l'oiseau infecté contre *Spirochaeta gallinarum.* [**Susceptibility of fowls to** *S. duttoni.*]—*Bull. Soc. Path. exot.* **40.** 152–155. **1966**

Using two strains of *S. duttoni*, infection of fowls was obtained by intraperitoneal inoculation, spirochaetes appearing in the blood after three days and persisting for two days. Passage through fowls was successful provided spirochaetes were still detectable in the blood used for inoculation. *S. duttoni* infection did not protect fowls against infection with *S. gallinarum*, nor did *S. duttoni* persist in the brain of fowls as it does in the rat. —U. F. RICHARDSON.

ISNARD, J. P. (1947.) L'Ictère spirochétique ou leptospirosique du chien. (**Leptospirosis in dogs.**]—*Bull. Acad. vét. Fr.* **20.** 237–240. **1967**

Observations are recorded on leptospirosis in dogs in the neighbourhood of Garches. Three cases are recorded, all attributed to contact with rats, and measures for rat destruction in the area have been put into force. The best results were obtained by treatment with stovarsol (acetarsol) or formalin, neoarsphenamine and sulpharsphenamine giving disappointing results.

—U. F. RICHARDSON.

PIROT, R., & BOURGAIN, M. (1944.) Non-transmission transplacentaire de *Spirochaeta persica*, chez le cobaye. La contamination du nouveau-né au moment de la naissance peut en imposer pour une transmission héréditaire. **[Non-transmission through the placenta of *Spirochaete persica* in the g. pig. Infection at birth can simulate hereditary transmission.]** —*Bull. Soc. Path. exot.* **37.** 213–217. **1968**

Seven female g. pigs infected with *S. persica* by inoculation produced uninfected young, and in none of the mothers was the presence of spirochaetes detected in the milk. The young were not immune to inoculation. In two cases young g. pigs developed infection four days after birth and it is suggested that this infection was due to contamination of the umbilical cord from the placental blood at the time of birth, the incubation period after inoculation being four days.

In discussion on the paper LAIRER remarked that there seemed little doubt that other spirochaetes could pass the placental barrier and that it seemed probable that this might also occur with *S. persica*. He confessed that in seven experiments using various species of trypanosomes he had failed to demonstrate transplacental infection of the young; BASSETT-SMITH had, however, shown that such infection might occur.—U. F. R.

JANSEN, J. (1940.) Overzicht der onderzoekingen van het uit de praktijk ingezonden ziektematerial over 1939. **[Investigation of pathological material sent (to the University of Utrecht) during 1939.]**—*Tijdschr. Diergeneesk.* **67.** 789–798. [German summary.] **1969**

In material submitted the following conditions, amongst others, were encountered: *Shigella flexneri*, type W. infection in a Shaw's monkey (*Macacus mulattus*), *Brucella* agglutinins (titre 1 : 400) in fluid from a knee *hygroma* in a bovine, *Brucella* agglutinins (titre 1 : 200) in a pig (it was not determined whether infection was due to *Br. abortus* or *Br. suis*), *Cl. septicum* isolated in pure culture from the kidney of a horse affected with oedema of one limb; Aujeszky disease in a bovine, *S. enteritidis* var. *dublin* from cattle and silver foxes, *S. typhi-murium* (duck type) from *Carduelis carduelis* L; *S. typhi-murium* from a civet cat; a case of quarter evil in a ten-days-old calf; swabs, from the throats of persons suspected to be infected with glanders were negative; streptococci isolated from dead canaries did not prove fatal to experimentally infected birds; anthrax in two raccoons and in the East Indian palm civet (*Paradoxurus hermaphroditus*); two cases of pseudo-membranous enteritis in cats; 25 of the 49 samples of blood from horses were positive for *Br. abortus* agglutinins (1 : 400). The positive cases were affected with such conditions as gonitis, swellings at the withers, poll-evil and fistulous withers, swellings at tarsal and carpal joints, swellings of other joints and distended tendon sheaths, alternating lameness, chronic tendinitis and tendo-vaginitis, and alternating left and right shoulder lamenesses.—P. LE ROUX.

LURIA, S. E. (1947.) **Recent advances in bacterial genetics.**—*Bact. Rev.* **11.** 1–40. **1970**

Until fairly recently bacterial genetics was largely Lamarkist in outlook. Attempts have been made to bring this study into line with the genetics of higher organisms. Such studies have been confined chiefly to the analysis of variation leaving for the time being the problem of the mechanism of homologous transmission of characters.

It is necessary to distinguish the differential properties of individuals within a population from the characteristics of the clones to which each individual gives origin. Mutants can be detected on plating a uniparental population either by the morphology or by testing bacteria from individual colonies for any desired property. By these methods only frequent mutations can be detected and where these occur they must be kept in check by reverse mutation or adverse selection if the parent type is not to be replaced rapidly.

The "fluctuation test" is used in the analysis of spontaneous mutations. The frequency distribution of the clonal grouping of the mutants will show great variation when mutations are rare, but should mutations be induced by the environment the proportion should not differ from sample to sample. It is possible by this method to define and calculate mutation rates as the intrinsic properties of strains.

In higher animals it has become accepted that the gene affects the character by determining the presence and specificity of one of the enzymes whose action is necessary for the appearance of the character. Gene mutations produce specific metabolic blocks by suppressing the activity of specific enzymes.

Phage resistance is associated with metabolic alterations and leads to the possibility of using this to isolate mutants and to throw more light on the biochemistry of phage growth. Where there is a block in the essential enzymatic synthesis growth will be suppressed and unless these lethal

mutations occur at extremely high rates they will fail to be detected.

The multiple effects of mutation are important as they facilitate the identification of the mutational step when it occurs in strains differing from one another by one or several mutations. Those so-called "genetic markers" are used to ensure against misinterpretation of accidental contaminants as mutants and the new mutant must show the original mutant character in addition to the new ones. Complex mutations, although occurring more rarely than simple mutations, are too frequent to be due to the chance occurrence of two simple ones together and also they produce additional phenotypic effects to those of simple mutations which are indicative of deep metabolic disturbance.

Most cases of supposed induction of mutations are probably due to selective agents such as chemicals, antisera, high temperatures and growth rate. Two agents which cause true mutations are radiation (X-rays and ultraviolet rays) and the nitrogen and sulphur mustards (β-chlorolethyl amines and sulphides). Mutation caused by radiation may be immediate or delayed and, by the mustards, is generally delayed. The number of mutations produced by radiation is proportional to the dose, and is more rapid with X-rays than with ultraviolet rays. These methods are completely aspecific and depend upon the properties of the molecule and not the nature of the stimulant.

The true induction of mutation by a specific treatment is well illustrated by the type transformation in the pneumococci. Here a non-capsulated R form of pneumococcus derived from an S culture Type II can be transferred into capsulated S forms of Types I, II and III by growth with dead pneumococci of the respective type *in vivo* or *in vitro* or by growth in the presence of cell-free extracts of each specific type. The presence of serous fluid is required for the transformation. AVERY has found that there is a specific component in the inducing extract, similar to the specific component of chromosomes, which is a desoxyribonucleic acid and is specific for each pneumococcal type.

L. feels that some mechanism for the orderly segregation of character determinants at cell division is necessary for the stability of cell characters and radiation experiments offer positive evidence of discrete genetic determinants in bacteria. He regards the evidence for reproductive processes in bacteria other than binary fission as lacking in cytological proof.

He considers that natural selection is always at work on the genotype as a whole rather than on individual characters. A large number of mutants lose the capacity to perform certain metabolic tasks but owing to the large amount of bacterial variability brought about by mutation, there is still ample material for natural selection.

LURIA criticizes the current methods of classification of bacteria as being determinative keys for practical use with little genetical justification.—J. I. TAYLOR.

See also absts. **2033-2035** (antibiotics), **2037** (staphylococci), **2038** (bacillary white diarrhoea), **2039** (actinomycosis), **2048** (tetanus), **2050** (bacteria in wounds), **2059-2063** (microflora of rumen), **2091** (equine abortion), **2100** (bacterial disruption by sonic energy), **2110** (veterinary bacteriology—a textbook), **2111** (brucellosis in animals—a textbook).

DISEASES CAUSED BY PROTOZOAN PARASITES

I. LAUNOY, L., & LAGODSKY, H. (1946.) Nouvelle contribution à l'étude de l'action préventive de la diamidino-diphénoxypentane sur les infections experimentales à *T. brucei* et a *T. evansi* du rat et du lapin. **[The preventive action of diamidino-diphenoxypentane (pentamidine) in experimental *Trypanosoma brucei* and *T. evansi* infection of the rat and rabbit.]** —*Bull. Soc. Path. exot.* **39.** 197–200. **1971**

II. LAUNOY, L. (1946.) Prophylaxie chimique de quelques trypanosomoses animales expérimentales des petits animaux de laboratoire par la diamidinodiphénoxypentane. **[Experimental prophylaxis of trypanosomiasis with diamidinophenoxypentane (pentamidine).]**—*Bull. Acad. vét. Fr.* **19.** 196–200. Discussion p. 200. **1972**

I. 0.005 g. of pentamidine inoculated subcutaneously into 100 g. rats gave protection against subcutaneous infection with *T. brucei* for about 100 days, but against *T. evansi* a dose of 0·025 g. protected for only 30 days.

In rabbits protection against *T. evansi* was obtained by the intramuscular injection of pentamidine in doses of 0·05–0·06 g. per kg., but the protection lasted only 15 days.

II. A summary of the results obtained on the protective and curative value of pentamidine in *T. brucei* and *T. evansi* infections of rats and rabbits is given. It is pointed out that in the treatment of *T. evansi*, cures were obtained with doses of 5–7 mg. per 100 g., but relapses occurred even with 9 mg. and the curative dose was considered to be 10–12 mg. Work in progress indicated that 5 mg. per 100 g. protected rats against *T. equiperdum* for at least two months. Cures of *T. equiperdum* infection were obtained with 0·7 and 0·8 mg. but one relapse occurred with 0·9 mg. With 1 mg. no relapses occurred up to the longest interval observed at the time of publication, 59 days. Protection against *T. equiperdum* was given up to 100 days, but L. considered that it was reliable for only one month.

For rats the coefficient of the preventive dose to the toxic dose was one-fifteenth to one twelfth.

In discussion, when the paper was given, VELU stated that preliminary tests of the value of the drug for protection against dourine had been made on donkeys in Morocco with very promising results.—U. F. RICHARDSON.

JOHNSON, J. G. (1947.) **The physiology of bacteria-free** *Trichomonas vaginalis.—J. Parasit.* **33.** 189–198. **1973**

A study of the responses of *Trichomonas vaginalis* to changes in the physical and chemical environment may throw light upon the epidemiology of vaginal trichomoniasis and the possibilities of the survival of the organism in extra-vaginal situations which may serve as reservoirs for infection of the general human population. The objective was to produce a culture medium with all the components known, none of which was superfluous. Early observations showed that blood serum supplied something essential to the growth of the parasite. Blood sera from a wide variety of animals proved equally good. It also proved necessary to add an infusion from liver and bacto-liver infusion agar was used. Bacto-peptone supplied some obscure protein fractions and glucose provided carbohydrate. Modified Ringer's solution with 0·6% NaCl was used throughout. The maximum population in the liver infusion agar medium was developed in a buffered medium within the pH range of 5·5–6·0 and multiplication was limited on the acid side at about pH5·0 and on the alkaline side at pH7·5. These and other observations led J. and his associates to adjust all subsequent media to pH6·0. The presence of oxygen suppressed the peak population achieved. A basal medium was chosen which contained a low concentration of agar and made anaerobic with thioglycollate. The carbohydrate requirements of the organisms demanded only glucose and polymers of glucose. Maltose gave the highest peak population and was later selected for use in an improved medium. Body temperature was at first used. The final culture medium, based on these studies, contained cysteine, peptone, liver infusion, maltose, human blood serum, modified Ringer's solution and a small amount of agar in 0·1% concentration. Certain added vitamins maintained the population at a higher level than in the controls. Although elimination of liver infusion prevented successful culture, efforts were made to replace it with growth factors. With 1 ml. of serum a high population was obtained in the absence of all the liver infusion. Peptone and blood serum were two undefined fractions in the medium but considerable progress towards their elimination has been made. Bacto-peptone was replaced by BBL. trypticase, liver was eliminated and folic acid plus an extensive series of other growth factors were added.—C. HORTON SMITH.

THORP, W. T. S., GORDEUK, S., Jr., GLANTZ, P. J., & LEARNED, M. (1947.) **The chemotherapy of cecal coccidiosis.**—*Amer. J. vet. Res.* **8.** 196–203. **1974**

The work deals entirely with the use of sodium sulphamerazine in water and sulphamerazine as a powder in mash in the treatment of caecal coccidiosis, the drug being therefore taken as part of the water or food supply and so being consumed in a reasonably uniform dosage without resort to administration to each individual bird. Sodium sulphamerazine, used as a 0·2% solution, in place of drinking water and offered to chicks at the first indications of symptoms lowered the mortality and when employed in field trials controlled outbreaks of caecal coccidiosis. Prophylactic properties were evident when 0·2% sodium sulphamerazine in water and 0·25% in mash were administered and there was no evidence to show that treatment interfered with the production of immunity to the strain of *E. tenella* used in the experiments. Weight gains were adversely affected when 1·0% sulphamerazine mash was used but little or no effect was observed when 0·2% sodium sulphamerazine or 0·25% sulphamerazine was employed. Lesions observed in the spleen and liver had no consistent pattern and could not be attributed to the sulphonamide therapy at this time as they were observed in both treated and untreated chicks.—C. HORTON SMITH.

KAY, M. W. (1947.) **Medication of cecal coccidiosis of chicks.**—*J. Amer. vet. med. Ass.* **110.** 20–24. **1975**

K. reports his attempts to analyse the action of sulphaguanidine, sulphamethazine and borax-urea mixtures by studying their prophylactic behaviour or curative effect in various stages of the life history of the parasite after infection and, further, gives a synopsis of trials of other possible chemotherapeutic agents for the control of caecal coccidiosis. A consideration of those chemotherapeutic agents which were known to be of some value showed marked differences in their effectiveness during different phases of the infection thus suggesting that the stages of the life cycle of the coccidium also differed. Tests with sulphaguanidine confirmed previous findings, in that it appeared to have little effect against later stages of the infection but at fairly high concentrations (*e.g.*, 2% in the food) was not entirely inert towards the later phases of the infection. K. believes that the action of sulphamethazine differs radically from that of sulphaguanidine as it is inert against released sporozoites, but is effective

in checking the infection even after the appearance of haemorrhage. The anticoccidial action of borax-urea mixtures differs in two respects from that of borax alone: the effective dosage may be much less, *i.e.*, 0·25–0·5% borax as against 2% borax, and the effective period is not limited to the release of the first generation merozoites. Borax-urea can produce a significant reduction of mortality when used as a prophylactic. In groups of chickens which received borax-urea throughout the fifth day of infection, no blood was passed before the termination of medication, but deaths occurred on the ninth and tenth days after infection. No such prolongation of infection was observed when borax-urea was used as a prophylactic or during the release of the first generation merozoites. The course of the infection under continuous medication suggests that the medication process is attenuative and that host-survival was due to the destruction of some of the weaker or less advantageously placed parasites and variable inhibition of the survivors. Borax is a toxic substance but it seems that urea reduces its toxicity either by direct detoxification or the reduced effective dosage. The ineffective agents tried were silver asboloxane (a proprietary combination of silver oxide and carbon), thiourea, sulphathalidine and vuzin . 2HCl [? isoctylhydrocupreine hydrochloride].—C. Horton Smith.

Frank, J. F. (1947.) **The toxic effects of coccidiostatic sulphonamides in chickens. 1. Observations of the effects on chickens of the coccidiostatic agent, sodium sulphamethazine.**—*Canad. J. comp. Med.* **11.** 225–235. [French summary.] **1976**

Sodium sulphamethazine as 0·22% of the feed given for six days to chicks three and a half weeks of age, did not affect the rate of growth during the subsequent six weeks. In longer periods of treatment it was found that 0·5% of drug in the feed for 12 days caused a retardation of growth which lasted for eight weeks, while the drug at the 1% level for six days caused a more temporary slowing of growth which was overcome by the end of the fifth week.

In tests for acute toxicity the LD50 of sodium sulphamethazine for chicks was apparently between 3·0 and 4·0 g. per kg. when administered *per os*, and 1·0 and 1·5 g. when injected, in solution, subcutaneously. F. concludes that the present systems of using sodium sulphamethazine in the control of caecal coccidiosis in Canada are not harmful to the birds.—W. E. Swales.

Rigdon, R. H., & Varnadoe, N. B. (1947.) **Effect of oxygen on malaria. An in vivo study in ducks.**—*J. Lab. clin. Med.* **32.** 57–65. **1977**

Anoxaemia results from the rapid destruction of red cells by the plasmodia. A study of the effect of oxygen was made on ducks infected with *P. lophurae*. It was found that ducks with a severe malarial infection showed marked clinical improvement when placed in an oxygen chamber and survived longer than controls.—M. C.

Seeler, A. O., Malanga, C., & Pierson, J. (1945.) **Effect of streptomycin on avian malaria.**—*Proc. Soc. exp. Biol., N.Y.* **59.** 291–292. **1978**

In small-scale trials with chickens infected with *P. gallinaceum* and ducks infected with *P. cathemerium* and *P. lophurae* streptomycin in doses as high as 400,000 units per kg. per day did not have any suppressive activity.—M. C.

Kornienko, Z. P., & Fedorov, S. V. (1945.) Lechenie novoplazminov (LP_4) gemosporidiozov ovets. **[Novoplasmin (LP_4) in the treatment of ovine piroplasmosis.]**—*Veterinariya, Moscow.* No. 4–5. pp. 30–31. **1979**

Novoplasmin—a new Soviet chemotherapeutic material—was tested on 102 sheep infected with babesia. A 2% solution was subcutaneously injected at the rate of 0·0004 g. per kg., 85·2% of the sheep completely recovered within seven days, the remainder dying.

Acriflavine may also be given at the same time (intramuscularly), at the dosage rate of 0·0004 g. per kg.—L. Levenbook.

Lotze, J. C. (1947.) **Variables and constants in experimental bovine anaplasmosis and their relationship to chemotherapy.**—*Amer. J. vet. Res.* **8.** 267–274. **1980**

Owing to the great variation in the severity, symptoms and mortality in anaplasmosis the validity of the various claims of successful treatment has been difficult to establish. In an attempt to throw light on the variables and constants in the disease, an analysis is made of the data pertaining to the initial parasitic attack in 20 cases of experimentally produced anaplasmosis.

The factors listed as variable include the prepatant period, in respect of which it was found that infections without any apparent incubation period might result from the use of a large inoculum. Visible symptoms do not become apparent until the parasites have increased and caused severe anaemia, but there is a fluctuation in the number of the parasites, with a series of attacks of which the initial one is the most severe. The severity of the attack was greatest in older animals, the anaemia developed in animals up to three years old was proportional to the intensity of injection, but in some of the animals over three years of age, severe anaemia was produced by relatively mild infections. The percentage of parasitized cells at the peak of infection varied from 3·2–31·9,

the degree of anaemia being usually correlated with the severity of infection, but not always. The lowest haematocrit value was 7·0 vol. %, but in majority of severe cases was ten. Some animals recovered even when the value was as low as 8·0, but others died whilst the value was as high as 13·5. At the peak of infection, or 1–2 days before, macrocytes appear in the blood, and after the peak the haematocrit value begins to improve, but this improvement may be delayed for 12 days. Fever is encountered most regularly at the time of the patent rise of infection, or the early fall. In some cases it does not occur till after the peak. The length of the febrile period is very variable. The first symptoms are loss of appetite and condition. They never appear before the peak of infection, and gradually disappear with the improvement of the haematocrit value.

As constant factors it is claimed that, in cases with an incubation period, during the first few days after the appearance of parasites their numbers double each day. In severe cases this rate of increase continues to the peak, but in milder cases it becomes slower. A curve of the fall in the number of parasites is practically a mirror of the curve of the increase. The haematocrit value begins to fall when parasites first become visible, and the drop increases in rapidity till the peak when it becomes slower, and macrocytes make their appearance.

It is suggested that the period of patent rise of infection may be utilized to test the value of drugs as this is relatively constant with reference to time and character, regardless of the amount and character of the inoculum, or the age of the experimental animal. At this time the infectiousness of the inoculum and the susceptibility of the animal have been proved. If the rise of infection is definitely stopped or materially delayed it may be concluded that that particular drug merits further investigation.—U. F. Richardson.

See also absts. **1986** (piroplasmosis), **2027** (dourine).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

Tierkel, E. S. (1948.) **Inauguration of rabies control studies by the U.S. Public Health Service.**—*J. Amer. vet. med. Ass.* **112.** 18–24. **1931**

In view of the alarming increase of rabies in the U.S. a control study unit has been set up under the veterinary section of the public health service. Preliminary comparative observations have indicated that the best method of examining brains for Negri bodies is the impression method, under which preparations are made by cutting sections of Ammon's horn, cerebral cortex and cerebellum, placing them on blotting paper, and pressing a slide gently down on to them to create a slight spread of tissue against the glass. The best staining results have been obtained with Johnson's modification of Seller's stain.

It is universally accepted that Negri bodies cannot be demonstrated in all rabid brains, and animal inoculation should be used to test Negri-negative brains. The intracerebral inoculation of white mice will produce typical and constant symptoms with an incubation period of 5–11 days and the consistent appearance of Negri bodies. A small amount of brain tissue pooled from Ammon's horn, cerebral cortex and cerebellum is emulsified in sterile saline and 0·03 ml. injected into each of three white mice. For treating contaminated brains good results have been claimed for 10% ether, 0·5% phenol and 1 : 5,000 solution of merthiolate. Efforts to devise other means of diagnosis, such as serological tests, have not proved satisfactory.

Experiments are being conducted to test the potency of vaccines and the duration of their protection, the most important aid to these experiments being the serum neutralization test using a standard fixed virus. This allows a grouping of experimental animals to be made on the amount of neutralizing substances present in pre-vaccinated blood. Preliminary tests show that 82% of pre-vaccinated bloods show little, or no, protecting neutralizing substances, but neutralizing antibodies against 100 M.L.D. of virus are present in 100% of dogs 20 days after effective vaccination.

Epidemiological studies are being carried out on the incidence of rabies in Alabama, and an investigation on the value of trapping to suppress rabies in foxes is in progress.

It has been recommended that rabies in animals should be made a notifiable disease, and to facilitate control, the prime considerations should be given to the provision of adequate diagnostic facilities, control of animals capable of transmitting the disease, and mass immunization of susceptible animals. It is urged that rabies control activities on a state basis should be placed under the control of a whole-time veterinarian, and that the co-operation of the public and animal owners should be sought by education measures, the exhibiting of films and the appointment of rabies advisory committees in the various counties and municipalities.—U. F. Richardson.

Parvis, D. (1946.) Azione di preparati sulfonamidici e solfonici sul decorso di infezioni sperimentali da ultravirus neurotropi e dermo-

tropi. **[Action of sulphonamides on the course of experimentally induced neurotropic and dermotropic filtrable virus infections.]**—*G. Batt. Immun.* **34.** 199–216. [English, French and German summaries.] **1982**

The action of sulphonamides [sulphanilamide and its derivatives and a large range of sulpha drugs] on the course of experimentally produced rabies and smallpox virus was examined. None of the drugs tested had any prophylactic or therapeutic action when given intravenously to rabbits infected by the intracerebral route with fixed rabies virus. They did not prevent infection in g. pigs by smallpox virus or influence appreciably the course of the disease. Good therapeutic results are said to have been obtained in dog distemper, choriomeningitis, lymphogranuloma, trachoma and some rickettsial infections. P. gives a list of viruses and rickettsias, arranged according to particle size, and showing what sulphonamide drugs had been tested by various authors previous to 1939 and indicating in which cases the results had been positive or negative.

—K. J. SINCLAIR.

—. (1946.) **Influenza [Immunology, interference phenomenon.]**—*Rep. Rockefeller internat. Hlth Div., 1946.* pp. 79–83. **1983**

Many aspects of the immunology of influenza infection are touched on in the report. The actual experiments are not recorded.

During an epidemic of influenza B mass vaccinations with influenza virus mixed A and B vaccine reduced the attack rate from 12·5–0·5% in one series of persons and from 9·9–1·1% in another.

Inoculation of the amniotic sac of chick embryos with throat washings proved to be a satisfactory method of isolation of the virus.

An interesting observation is that certain non-neurotropic virus strains such as influenza, mumps and Newcastle disease virus, which do not multiply in the brains of mice, are nevertheless capable, if inoculated into the brains of mice, of preventing the growth and lethal action of a large number of doses of neurotropic viruses, notably western equine encephalomyelitis.

Observations are mentioned which suggest that influenza B derived from allantoic fluid constitutes a complex antigen comprising a heat stable component which agglutinates erythrocytes and reacts primarily with the specific antibody; and a heat labile component reacting with a factor of normal serum which ordinarily tends to inhibit the haemagglutinating activity of the influenza virus.

In conclusion certain metabolic changes are mentioned which influenza A infection brings about in chick embryo tissue.—R. R. A. COOMBS.

BOTO, J. T. (1942.) Un nuevo método de immunización activa contra la viruela ovina. **[Active immunization against sheep pox.]**—*Trab. Inst. Biol. anim., Madrid.* **7.** 345–353. **1984**

Trials were made on a small scale of an aluminium hydroxide adsorbed vaccine in sheep pox. The adsorbed vaccine had good keeping qualities, the reaction was not severe and vaccinated sheep were not capable of infecting healthy sheep placed in contact with them.—M. C.

MORIN, J. E., & TURCOTTE, H. (1946.) **The biological purification of vaccine emulsions by penicillin.**—*Canad. J. Res.* Sect. E. **24.** 149–154. **1985**

Smallpox vaccine emulsions can in a few days be freed of their principal microbes except for Gram-negative bacilli by the addition of 56 units of penicillin per ml. When the threshold of penicillin is allowed to drop below this level anaerobic spores including *Clostridium welchii* and *Cl. fallax* are capable of multiplication. However, it was found that the newly isolated bacteria had lost their pathogenicity for laboratory animals.

Field trials with the vaccine indicate that the addition of penicillin has no harmful effect on the vaccine virus.—J. W. PULLIN.

ANDREEV, K. P. (1945.) Kliniko-epizootologicheskie osobennosti smeshannovo techenya infektsionnoĭ anemii i nuttallioza. **[Clinical and epizootic characteristics of concurrent equine infectious anaemia and piroplasmosis.]**—*Veterinariya, Moscow.* No. 4–5. pp. 15–17. **1996**

The author confirms that piroplasmosis in horses may render acute a previously latent infectious anaemia, this explaining failure of trypanblue and trypaflavine therapy. The salient features of these diseases are tabulated to aid differentiation. Peak fever symptoms correspond with large numbers of parasites in the blood in cases of uncomplicated *Babesia* infection, but when the two diseases occur together very few or no parasites are present.—L. LEVENBOOK.

DA CRUZ, S. (1946.) Notas sobre a dermatose nodular da Ngamilandia. **[Lumpy skin disease (of cattle).]**—*Rev. Méd. vet., Lisboa.* **41.** 266–275. [French summary.] **1987**

As the spread of this disease in S. Africa towards the frontier constituted a threat to the cattle of Portuguese East Africa, C. visited S. Africa to consult the veterinary authorities and to see cases of the disease. He gives an account of the history, symptoms, causation and possible preventive measures.—M. C.

DE KOCK, G. (1948.) **Lumpy skin disease (knopvelsiekte) of cattle in Southern Africa.**—*J. Amer. vet. med. Ass.* **112.** 57–58. **1988**

This disease was under investigation in N. Rhodesia in 1930, but was not regarded as infectious. In 1944 it was diagnosed in the northern border districts of the Union of S. Africa, and by 1946 it had spread over the greater part of the Union in spite of control measures. How it spread from N. Rhodesia to the Union remains a complete mystery.

The characteristic lumps are situated in the dermis being 0·5–1 inch in diameter, the affected animals showing moderate fever, stiffness and rapid loss of condition. The lumps may also affect the mucous membranes of the mouth, nostrils, larynx, trachea and the gastro-intestinal tract, and when the respiratory tract is affected, asphyxia may result. The milk flow usually drops sharply, and lumps frequently develop on the teats. The mortality does not exceed 10% but there is serious economic loss in condition and milk yield.

The lumpy nodule is a non-purulent inflammatory reaction in which there is an infiltration of mononuclear cells and fibroblasts, followed by necrobiosis. Inclusion bodies, staining reddish-pink with phloxine stain, have been demonstrated in the cytoplasm of epithelial cells. There is some slight resemblance to molluscum contagiosum of man.

The disease is believed to be due to a virus and is thought to be insect transmitted. It does not spread by contact, but can be transmitted by the injection of blood or material from the skin lesions. On artificial passage through cattle the virus usually disappears after the third generation. The disease has not yet been successfully transmitted to laboratory animals.—U. F. Richardson.

Durant, A. J., & McDougle, H. C. (1945.) **Further investigations of the transmission of fowl paralysis (*Neurolymphomatosis*) by direct transfusion.**—*Res. Bull. Mo. agric. Exp. Sta.* No. 393. pp. 18. **1989**

Fowl paralysis was transmitted by intravenous inoculation of blood into chickens of 1–4 days old. A strain of White Wyandotte chickens was more refractory than a strain of White Leghorns when inoculated by this route.—F. D. Asplin.

Florman, A. L. (1947.) **Hemagglutination with Newcastle disease virus (NDV).**—*Proc. Soc. exp. Biol., N.Y.* **64.** 458–463. (1947.) Reprinted in *Stud. Rockefeller Inst. med. Res.* **134.** 325–332. **1990**

When haemagglutination titrations were carried out at room temperatures (20°–27°C.) there was less marked agglutination with low virus dilutions than with higher ones. This effect which simulates a prozone did not appear if the titrations were carried out at 4°C. The end point of a titration carried out at 4°C. was usually lower by 2–4 times than when the test was performed at room temperature. At 4°C. Newcastle disease virus appeared to be adsorbed more completely and to elute less rapidly from chicken red cells than at room temperature.—F. D. Asplin.

Bruner, D. W., Edwards, P. R., & Doll, E. R. (1947.) **Newcastle disease [pneumoencephalitis] in a group of young chicks.**—*J. Amer. vet. med. Ass.* **110.** 382–383. **1991**

Newcastle disease virus was isolated and identified from a flock in Kentucky.

—F. D. Asplin.

Morgan, H. J. (1946.) **Newcastle disease of poultry. Problems in diagnosis.**—*Vet. Student, Iowa.* **9.** 17–20. **1992**

An account of the symptoms of Newcastle disease observed in the U.S. and of the methods of diagnosis and recommendations for the control of the disease.—F. D. Asplin.

Evans, A. S., & Curnen, E. C. (1948.) **Serological studies on infectious mononucleosis and other conditions with human erythrocytes modified by Newcastle disease virus.**—*J. Immunol.* **58.** 323–335. **1993**

The sera of some patients infected with infectious mononucleosis agglutinate Newcastle disease virus (N.D.V.) treated human group O red cells, to a higher titre than the sera from normal persons. However, high titres were observed in the sera of some patients with other infectious diseases.

The sera of rabbits immunized against N.D.V. or three other unrelated viruses also agglutinated N.D.V. treated red cells to a higher titre than normal rabbit serum.

Human serum as well as serum from rabbits immunized against viruses other than N.D. failed to inhibit agglutination of fowl red cells by N.D.V.

It is concluded that the capacity of both human and immune rabbit sera to agglutinate N.D.V. treated cells is unrelated either to the heterophile antibody of infectious mononucleosis or to the hypothetical agent of that disease.

—F. D. Asplin.

Reagan, R. L., Lillie, M. G., Poelma, L. J., & Brueckner, A. L. (1947.) **The response of some mammals to Newcastle virus.**—*Amer. J. vet. Res.* **8.** 427–430. **1994**

A strain of Newcastle disease virus was adapted to Syrian hamsters by intracerebral inoculation. This adapted virus produced death in hamsters by intranasal instillation but further transmission by that route did not occur. The hamster-adapted virus failed to infect rabbits by intracerebral injection, but induced symptoms in

mice and g. pigs by the same route; continued passage was not possible.

A rhesus monkey, inoculated intracerebrally with the hamster-adapted virus, and monkeys inoculated intranasally and intracerebrally with egg-adapted virus, did not develop Newcastle disease infection.—F. D. ASPLIN.

BURNET, F. M. (1945.) **Haemagglutination by mumps virus: relationship to Newcastle disease and influenza viruses. [Correspondence.]**—*Aust. J. Sci.* **8.** 81–83. **1995**

Newcastle disease, influenza A, influenza B and swine influenza form a linear series in their capacity to be eluted from susceptible fowl erythrocytes. This has been interpreted on the hypothesis that all viruses become attached to a single series of receptors but that these receptors vary in their accessibility and in the ease with which they can be removed by virus action. Mumps virus was found to behave in the same way as Newcastle disease, reacting only with the most accessible receptors and thus showing the existence of a linear series extending from mumps virus to swine influenza virus.

It is suggested that mumps and the other viruses are derived from a common ancestral form. If this were so, it would be expected that this virus had the power to multiply in superficial cells of the mucous membranes as the others do, and further suggests the possibility that primary infection by the mumps virus starts in this way.
—N. WICKHAM.

NEEFE, J. R., STOKES, J., Jr. (1945.) **An epidemic of infectious hepatitis apparently due to a water borne agent. Epidemiologic observations and transmission experiments in human volunteers.**—*J. Amer. Med. Ass.* **128.** 1063–1075. [from abst. in *Bull. Hyg., Lond.* **21.** 81–82. (1946.)] **1996**

The development of an epidemic in a holiday camp is described. Transmission experiments in human volunteers are described. Infection was not transmitted by nasopharyngeal washings, by urine, ground-up flies or by subcutaneous injection of serum. It was transmitted by oral administration of serum and by means of faeces and filtrates of faeces. The evidence indicated that the main means of transmission had been well water contaminated by sewage from cesspools.
—M. C.

dEBURGH, P. M., YU, P.-C., HOWE, C., & BOVARNICK, M. (1948.) **Preparation from human red cells of a substance inhibiting virus hemagglutination.**—*J. exp. Med.* **87.** 1–9. [Authors' summary copied *verbatim.*] **1997**

Methods have been described for the extraction and purification of an agent inhibiting the hemagglutination of red cells by influenza (PR8) and mumps viruses. Human red cells have served as the chief source of the inhibitor but the latter has also been found in human lung.

The active extracts have been purified to the extent that 0·1 gamma of material suffices to inhibit one hemagglutinating dose of virus. Incomplete chemical characterization of the most highly purified fractions available indicates the presence of 2·6 per cent nitrogen, at least 50 per cent of polysaccharide, and no phosphorus. In the ultracentrifuge the purified preparation behaves as a poly-disperse macromolecular substance.

The active material can be obtained from red cell stroma in an ether- and chloroform-soluble form which, on further treatment, can be converted into chloroform-insoluble material. It is possible that the former represents more closely the virus receptor as it exists in the red cell.

The purified inhibitor is inactivated on incubation with the virus at 37°C. The nature of this effect is being investigated.

BURNET, F. M., & STONE, J. D. (1946.) **The haemagglutinins of vaccinia and ectromelia viruses.**—*Aust. J. exp. Biol. med. Sci.* **24.** 1–8. **1998**

In contrast to influenza and Newcastle disease in which the virus particles themselves are responsible for haemagglutination, it was found that the haemagglutinins of vaccinia and ectromelia are quite distinct from the virus particles. Absorption tests using these viruses and susceptible red cells showed that the haemagglutinins were removed with practically no loss of virus; and by high speed centrifugation the virus was removed from the supernatant fluid without reduction in the haemagglutinin titre.

Cells which are susceptible to haemagglutination by these viruses are also agglutinated by suspensions of tissue lipoids. The addition of dilute normal serum will inhibit such non-specific reactions but does not affect true virus haemagglutination.

Elution of haemagglutinin from cells on which it had been absorbed, such as occurs with influenza virus, was not obtained, but by the use of immune serum it was possible to remove the haemagglutinin leaving the red cells apparently unaltered.

The range of cells agglutinated by vaccinia and ectromelia includes those of fowls, pigeons and mice but within each species some cells prove insusceptible.—N. WICKHAM.

FLORMAN, A. L. (1946.) **"False positive" hemoagglutination by allantoic fluids of embryonated eggs inoculated with unfiltered throat washings.**—*J. Bact.* **52.** 307–310. **1999**

Some embryonic fluids of chick embryos

contaminated with miscellaneous bacteria as a result of inoculation with unfiltered throat washings produce agglutination of chicken red cells indistinguishable from that caused by certain viruses. This agglutination is inhibited by small amounts of normal serum.—F. D. ASPLIN.

JONES, D., & SCHATZ, A. (1946.) **Methods of study of antiphage agents produced by micro-organisms.**—*J. Bact.* **52.** 327–335. **2000**

A number of methods are described by which organisms isolated at random or from soil were tested for antibacteriophage activity. The criterion for the operation of this phenomenon is the ability of the bacterium to grow in those areas of the medium where the corresponding phage is inhibited. It is pointed out that similar methods may possibly be used for the detection of antibiotics directed against plant and animal viruses. —E. K.-N.

See also absts. **2064** (equine encephalomyelitis), **2019** and **2020** (epidemic diarrhoea in mice), **2048** (a virus disease of swine in China), **2048** (rinderpest and Newcastle disease in China).

IMMUNITY

See also absts. **1941** and **1942** (anthrax), **1949** (swine erysipelas), **1954** (salmonellosis), **1959** (brucellosis), **1983** (influenza), **1984** (sheep-pox), **1985** (purification of vaccine by penicillin), **2010** (nutrition and immunity), **2013** (protein depletion and immunity).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

PARISH, H. E., & RUDE, C. A. (1946.) **DDT for control of the biting sheep louse.**—*J. econ. Ent.* **39.** 546. **2001**

In preliminary trials, sheep infested with *Trichodectes ovis*, were dipped in a 0·2% D.D.T. bath, made by mixing with water a pine-oil solution of D.D.T. No live lice were found on sheep kept under observation after dipping. —L. DAVIES.

UNSWORTH, K., & GORDON, R. M. (1946.) **The maintenance of a colony of *Phlebotomus papatasii* in Great Britain.**—*Ann. trop. Med. Parasit.* **40.** 219–227. **2002**

An earlier technique of breeding *Phlebotomus* in the laboratory was successfully employed involving the use of separate lamp-glasses to form feeding and breeding chambers. A less laborious method was evolved, employing porous cement blocks with chambers with removable tops running through them, simulating a rodent burrow in size. The floors of the chambers were covered with a layer of larval food consisting of rabbit faeces mixed with garden soil. Situated at one end of the "burrow" was a cage provided with a sleeve through which the blood supplying host three weeks old rat was introduced daily. The blocks were immersed in water before use, and were kept moist by having water filled reservoirs, to maintain high humidities within the chambers, and the whole unit kept in an incubator at 30°C. The techniques used by previous workers to breed sand-flies are briefly reviewed. —L. DAVIES.

ALEKSANDROV, N. A. (1945.) Rinestroz loshadeĭ. [*Rhinoestrus purpureus* **infestation in horses.**] —*Veterinariya, Moscow.* No. 6. pp. 19–20. **2003**

A. describes two instances of infestation with larvae of *Rhinoestrus purpureus* in horses, and gives a brief account of the insect and its life history.

Severe infestations manifest themselves by ulceration of the nasal mucous membranes, difficulty in inspiration, nasal discharge and a nervous irritation reminiscent of colic. Benzine, either alone or as an oil emulsion, is recommended as a means of killing the larvae.—L. LEVENBOOK.

ISHUKOV, G. K., & ISHUKOVA, F. A. (1945.) Rol' pastbishchnykh kleshcheĭ iz roda Dermacentor marginatus v epizootologii infektsionnovo entsefalomielita loshadeĭ. [**Role of pasture ticks of the species *D. marginatus* in the epidemiology of equine infectious encephalomyelitis.**] —*Veterinariya, Moscow.* No. 4–5. pp. 17–21. **2004**

After reviewing the insect vectors of equine encephalomyelitis as deduced from the literature, the authors describe experiments with the tick *Dermacentor marginatus* in the Bashkir Republic.

Clean ticks, after feeding on artificially infected mice and rabbits, could transmit the disease to horses.

It is further shown that, in regions where encephalomyelitis is rife, these ticks could become spontaneously infected with the virus.—L. L.

FOURIE, P. J. (1945.) **The dip-resistant blue tick.**—*Fmg S. Afr.* **20.** 557–558 & 570. **2005**

The problem raised by the development and spread in S. Africa of the arsenic resistant strain of the blue tick, Boöphilus decoloratus as seen in 1945, prior to the application of newer synthetic insecticides to the pest is outlined. Although the search for a new insecticide had shown that nicotine gave satisfactory control, the situation was still serious since nicotine was difficult to obtain in adequate quantities.—L. DAVIES.

GUILHON, J. (1946.) Une nouvelle affection cutanée du rat. [**A new sarcoptic mite from**

Mus decumanus.]—*Bull. Acad. vét. Fr.* **19.** 285–296. **2006**

A new species of sarcoptic mite, *Sarcoptes anacanthos*, is recorded which attacks the brown rat (*Mus decumanus*), and its albino variety used in laboratories. The skin lesions caused usually occur on the trunk of the rat, leaving the ears unaffected, unlike the more familiar rat-mange caused by *Notoedres alepis*. The mange is contagious and frequently fatal.—L. Davies.

See also absts. **2040-2043** (parasiticides), **2108** (trombiculine larvae).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

Mahadevan, P. (1946.) **A case of bovine nasal schistomiasis.**—*Trop. Agriculturist.* **102.** 101–102. **2007**

Furcocercous larvae resembling those of *Schistosoma nasalis* were obtained from a specimen of *Planorbis exustus* collected from a pool in which a cow affected with schistosomiasis had been bathed.—M. C.

See also absts. **2044** (phenothiazine).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Drieux, H. (1944.) Statistiques sur le cancer chez les animaux domestiques. [**Statistical evidence on cancer in domestic animals.**]—*Rev. Path. Comp.* **44.** 181–195. **2008**

This is an annotation of the literature concerning the incidence of neoplasms in the domestic animals.—M. C.

See also abst. **2046** (skin tumours).

Waters, N. F. (1947.) **The contagious nature of a lymphoid tumour in chickens.**—*Science.* **106.** 246–247. **2009**

The results of experimental work suggest that a chicken tumour which is described is caused by a contagious agent.—F. D. Asplin.

NUTRITIONAL AND METABOLIC DISORDERS

Schneider, H. A. (1948.) **Nutrition of the host and natural resistance to infection. III. The conditions necessary for the maximal effect of diet.**—*J. exp. Med.* **87.** 103–118. [Author's summary copied *verbatim.*] [For previous parts, see *V. B.* **16.** 135, and **17.** 8.] **2010**

The observation has been confirmed that the property of a "natural" diet of whole wheat and whole dried milk to promote a higher survival rate among a stock of outbred, genetically heterogeneous W-Swiss mice subjected to *S. typhimurium* infection, over that promoted by a "synthetic" diet, is dependent upon a relationship between avirulent and virulent members of the pathogen population.

This relationship has now been analyzed in terms of number (interacting doses) and time (interval between interacting doses). On any given diet survivorship has been demonstrated to be a function of the host's experience of the avirulent pathogen; increasing experience, either in dose or time, resulted in increasing survivorship. For a given set of interacting avirulent-virulent doses the rate at which survivorship rose was greater when the "natural" diet was fed than when the "synthetic" diet was fed. This difference in survivorship-increase rates gave rise to differences in survivorship between the two diets. These dietary differences ranged from minimal to maximal with increasing time, and then, as still more time elapsed, back to minimal again. In consequence an optimum time interval was found at which the dietary effect was maximal. This time interval was chosen for assay purposes. The assay method thus arrived at was tested repeatedly for reproducibility, and statistical analysis showed it to be reliable and capable of demonstrating a mean dietary difference in survivorship of 55 per cent.

The nature of the relationship established between avirulent and virulent *S. typhimurium* in mice has been discussed.

Temperton, H. (1947.) **Nutrition in relation to health in poultry.**—*Harper Adams Util. Poult. J.* **31.** 29–34. **2011**

Health in poultry implies not only freedom from disease but also that condition of the body at which inherited potentialities for economic factors are capable of full expression. Neither experience nor experimental evidence supports the belief that a high level of nutrition builds up resistance to infectious diseases which appears to be as much a matter of heredity as of actual stamina. The present paper concerns disease conditions primarily of nutritional origin.

As a result of selection of poultry for earlier maturity and higher levels of production deficiency diseases appear earlier and in greater severity in

the better birds of a flock. Although it would appear necessary in such conditions to feed more of the essential nutrients such a policy is limited because of (a) economic factors; (b) excesses of some nutrients, *e.g.*, minerals may be as harmful as deficiencies.

The most difficult conditions to diagnose are those in which deficiencies and excesses are marginal, producing general unthriftiness, retarded growth and poor feather development.

Wartime conditions and restrictions accentuated effects associated with low available energy foods—the "six-day" chick disease was an example—and these improved and disappeared when extra maize or other cereals were added to the rations. T. believes that continued shortage of starch has been responsible for slower growth rates of chicks and lower egg production. Protein requirements appear to be around 18% of the ration for the first 6–8 weeks of life and 15% thereafter for growing and laying birds. The main argument against excess protein is the economic one rather than the harmful effects of the excess. T. is of opinion that prolapse of the uterus, bloodspots in eggs and coming into lay at too immature an age are not due to forcing effects of protein.

With mixed diets the only minerals likely to be deficient are calcium and common salt. Although manganese is a factor associated with perosis (slipped tendon) the normal diet of the bird is usually adequate in this element in absolute amounts, but large excesses of other minerals, phosphorus in particular, renders the Mn unavailable. Deficiency of salt leads to impaired protein utilization and depressed appetites, but 0·5% added salt is desirable for all diets. Salt poisoning is very uncommon under normal conditions.

Calcium supplements in the mash are preferable to the free choice of a calcium grit. Of the vitamins A, D and riboflavin are most important for poultry. Vitamin D is supplied by 0·5% cod liver oil in the diet and this also supplies vitamin A, but the cheapest source of the latter and of riboflavin is good grazing. During the winter months an allowance of high quality dried green grass should be added to all diets.—A. EDEN.

TRUMBLE, H. C. (1945.) **The relation of wet-season variability to fat-lamb production in South Australia.**—*Trans. roy. Soc. S. Aust.* **69.** 16–21. **2012**

Methods previously employed in South Australia for determining the climatic basis of the type of pastoral and agricultural production practised have been utilized further to assess wet-season variability in association with fat-lamb production.

Relationships have been established between the mean length of the period of influential rainfall and the maximum expected occurrence of effective rainfall periods of four and five months respectively, in each case dating from the first month for which the highest values obtain. From these relationships corresponding values have been calculated for more than 200 stations and maps constructed to compare the distribution of fat lambs with the rainfall expectancies found.

The data emphasize that districts including the South East, Mount Lofty Ranges and Kangaroo Island receive an expected occurrence of 90% or more of seasons of sufficient duration to raise fat lambs satisfactorily, without hand-feeding, whereas all other portions of the State should make provision for the drought years which will inevitably occur there.—M. C. F.

I. WISSLER, R. W. (1947.) **The effects of protein-depletion and subsequent immunization upon the response of animals to pneumococcal infection. I. Experiments with rabbits.**—*J. infect. Dis.* **80.** 250–263. **2013**

II. WISSLER, R. W. (1947.) **The effects of protein-depletion and subsequent immunization upon the response of animals to pneumococcal infection. II. Experiments with male albino rats.**—*J. infect. Dis.* **80.** 264–277. **2014**

I. Experiments showed that rabbits fed a protein deficient diet did not respond to immunization with pneumococcal vaccine to the same degree as rabbits fed a normal diet. The rabbits on a protein deficient diet showed a much decreased resistance to intradermal pneumococcal infection, as judged by the much higher mortality rate of this group. W. associated this lowered resistance with the lower serum agglutinin response, as there seemed a good correlation between serum agglutinin level and ultimate survival or death. The local tissue response was also studied in the two classes of animals. Interstitial agglutination and phagocytosis so evident in the well nourished immunized animal gave place to a spreading cellulitis, interstitial growth of pneumococci and absence of phagocytosis in the immunized protein depleted animals.

Other observations such as serum protein concentrations, leucocyte concentrations and post infective temperature levels were also made on the response of the animals to the infective inoculations.

From the general pathological point of view the animals on the protein depleted diet showed extensive emaciation, loss of adipose reserves, loss of hair, muscular and visceral atrophy, depletion of lymphoid elements of the spleen, serous atrophy of the bone marrow and frequent ascites.

II. Similar investigations were carried out on rats. With this animal however the interpre-

tation of the findings was more complicated as the normal non-immunized rat, in contrast to the rabbit, possessed a moderate natural resistance to pneumococcal type 1 infection as indicated by the fact that rats survived for 48 hours after inoculation while rabbits survived only 24 hours.

In comparing the acquired resistance of groups of normal rats and group of rats maintained on the protein deficient diet, the contrast between the serum agglutinin levels of the two diet groups was neither as striking nor as consistent as in the experiments with rabbits.

The main conclusion was that protein depletion in the rat appeared to exert the double effect of diminishing both natural and acquired resistance to the pneumococcus.

From the histological standpoint observations indicated that the degree of acquired resistance of the rat was related to the effectiveness of phagocytosis. The non-immune rat, in contrast to the non-immune rabbit, also showed a significant but not protective phagocytic activity for pneumococci despite the fact that the serum from such animals was not able to protect mice from infection.

R. R. A. COOMBS.

REECE, R. P. (1947.) **The influence of a synthetic thyroprotein when fed to dairy cows over an extended period.**—*J. Dairy Sci.* **30.** 313–324. **2015**

Studies were undertaken to observe the effect of feeding thyroprotein to dairy cows in respect of milk yield and quality, live weight and heart-rate. The daily feeding of 10 g. thyroprotein resulted in an average initial increase in milk yield of 7·6%, and of 15 g. thyroprotein an initial increase averaging 19·7%. Rapid decreases in milk yield occurred during the second week after withdrawal of thyroprotein feeding.

Four cows were subjected to intermittent feeding and withdrawal of the drug; in three of them withdrawal was accompanied by a marked decrease in milk yield, followed by a return to the pre-withdrawal level on refeeding.

Nine cows were given 10 or 15 g. thyroprotein daily for periods of 3–17 months. Six animals secreted milk with a higher fat content and six produced more milk than that secreted in the corresponding period of either a previous or a subsequent lactation. Three cows failed to show any increase in milk production over the entire thyroprotein feeding period, but of these only one failed to show any initial response in milk production. The usual normal changes in heart rate and body weight resulted from feeding of the thyroprotein in all cases.—A. EDEN.

TURNER, C. W., KEMPSTER, H. L., & HALL, N. M. (1946.) **Effect of continued thyroprotein feeding on egg production.**—*Poult. Sci.* **25.** 562–569. **2016**

Thyroprotein fed at the level of 10 g. per 100 lb. mash to White Leghorn hens in their fourth laying year maintained greater egg production over the period May to late August as compared with untreated controls. The thyroprotein fed hens laid an average of 25·7% more eggs during the year than the controls.

In similar experiments with Rhode Island Red hens, in their second laying year the egg production of thyroprotein fed hens over two years was distinctly above that of untreated controls. The effect on body weight was small in the White Leghorns, but in the Rhode Island Reds the control group averaged about one lb. more in body weight than the thyroprotein fed group, the difference being due to the relative amounts of fat in the carcasses. No marked changes in weight of glands or organs of the thyroprotein fed group were observed, although the average thyroid weight of this group was somewhat below that of the controls.—A. EDEN.

YAKOVLEV, L. A. (1945.) Poedanie shersti verblyudami v rezul'tate solevovo golodaniya. **[The eating of wool by camels as a result of salt deficiency.]**—*Veterinariya, Moscow.* No. 4–5. p. 41. **2017**

Camels that had received no salt for eight months, were observed to have poor appetites, and to be licking and eating both their own fur, and that off adjacent animals. On receiving salt, the above symptoms vanished.—L. LEVENBOOK.

BRAIN, W. R. (1947.) **Malnutrition of the nervous system.**—*Brit. med. J.* November 15. 763–766. **2018**

In this review the gaps in our knowledge of the factors required for nutrition of the nervous system are pointed out. Little is known of the needs of the central nervous system for amino-acids and less is known about the role of lipoids and mineral substances, though copper does play some part in the prevention of swayback in sheep. There is some knowledge regarding the metabolism of glucose and the part played in this by vitamins of the B group. The relation of aneurin deficiency to beri-beri and to Wernicke's encephalopathy and of nicotinic acid to pellagra are reviewed.

The difficulty of distinguishing clearly between an intoxication and a deficiency is illustrated by reference to lathyrism and to the role of maize and cassava in pellagra.

It is concluded that in studying nervous disorders the chemistry of the nerve cell must be considered in addition to the morbid anatomy.

—J. T. ABRAMS.

See also absts. **2090** (nutrition and animal breeding), **2092** (puerperal haemoglobinurea), **2113** (food, nutrition and health—a textbook).

DISEASES, GENERAL

I. CHEEVER, F. S., & MUELLER, J. H. (1947.) **Epidemic diarrheal disease of suckling mice. I. Manifestations, epidemiology, and attempts to transmit the disease.**—*J. exp. Med.* **85.** 405–416. [Authors' summary copied *verbatim.*] **2019**

II. PAPPENHEIMER, A. M., & ENDERS, J. F. (1947.) **An epidemic diarrheal disease of suckling mice. II. Inclusions in the intestinal epithelial cells.**—*J. exp. Med.* **85.** 417–422. [Authors' summary copied *verbatim.*] **2020**

I. The disease was almost certainly infectious. Its eradication offered much greater practical difficulties than are presented by certain other infections of mice. A definite tendency toward greater susceptibility in first litters as contrasted with subsequent ones was noted. Advantage could be taken of this increasing resistance to keep the infected colony in efficient production, but accidental loss of the stock prevented the continuation of the plan for a time sufficient to exclude possible failure due to seasonal variation. Multiple etiologies may well have existed even within this circumscribed outbreak. Experimental investigation of the condition offers extraordinary difficulties but its thorough understanding promises to bring new light to basic problems of disease.

II. Intranuclear inclusions were found in 75 per cent of young mice suffering from a spontaneous diarrheal disease. They were confined to the epithelial cells of the small intestine, and to the intestinal and mesenteric lymphadenoid tissue. They were seen only between the 10th and 15th days after birth. In apparently healthy control mice of the same age group, they were found in only two of thirty-six animals (5·5 per cent) and these were in mice from the same room and stock as the diseased animals.

Nursing mice experimentally infected by feeding unfiltered diarrheal feces, also showed inclusion bodies from the 10th to the 14th day inclusive. The inclusions were not present during a corresponding age period, in the healthy stock used for these experiments.

Inclusions have also been found in the cytoplasm of the intestinal epithelial cells of young mice but without any significant relation to the disease under study. No conclusions as to their nature are warranted at this time.

COHRS, P. (1943.) Der sogenannte plötzliche Herztod des Schweines. **[Syncope in pigs.]**—*Z. Fleisch u. Milchhyg.* **54.** No. 5. 41–44. **2021**

The pathogenesis, conditions of occurrence and the macro-microscopic appearances of the organs are described. Possible causes include food poisoning, infective disease, vitamin deficiencies, thyrotoxicosis and what is termed domestication. The conditions in which pigs in Germany are brought to early maturity under unnatural conditions and the rapid system of fattening may have a deleterious effect on the heart and circulatory organs. This might cause an increased irritability of the cardiac nerves, especially of the vagus, in such a way that reflex spasmodic contractions of the branches of the coronary arteries or their capillaries might occur; anaemic foci might be produced in the cardiac muscle with the production of areas of anaerobic necrosis. Stimulation of the vaso-dilator system might also lead to the production of degenerative changes. C. compares the condition to *angina pectoris* of human beings.—A. L. WILSON.

I. HÜLPHERS, G., LILLEENGEN, K., & HENRICSON, T. (1943.) Meddelande fran Sv. Jägareförbundets Viltundersökning. Redogörelse för resultaten av de forsatta undersökningarna av olika hjortdjur, rödräv, grävling, sork och ekorre. **[Report from the Swedish Gamekeepers' Society on *post mortem* examinations. Further work on deer, red foxes, badger, voles and squirrels.]**—*Svensk Jakt.* No. 7. pp. 296–298. **2022**

II. HÜLPHERS, G., LILLEENGEN, K., & HENRICSON, T. (1944.) Meddelande fran Sv. Jägareförbundets Viltundersökning. Redogörelse för resultaten av de fortsatta undersökningarna av insända tjädrar och orrar fran 1 februari 1943 till 30 april 1944. **[Report from the Swedish Gamekeepers' Society on *post mortem* examinations. Further work on capercailzie and black cock.]**—*Svensk Jakt.* No. 7. pp. 279–282. **2023**

I. A detailed report is given of P.M. findings in the organs of elks, roedeer, red deer, red foxes, badgers, voles and squirrels sent in for examination from April 1941 to January 1943, with one photogravure and a table of findings. The 12 elks were all shot, with one exception which was found dead, the 19 roedeer were found dead with two exceptions, the two red deer were found dead. Two of the foxes were found dead and the third shot. Two badgers, three voles and three squirrels were all shot.

II. Details are given under the following headings accompanied by five photographic illustrations of P.M. findings in 72 capercailzie (70 found dead and 2 shot) and 19 black cock (found dead), which were sent in for examination from February 1943 to April 1944:— infectious diseases with parasitic infestation, parasitic infestations, organic diseases or external damage, organic diseases or external damage with parasitic infestation.—F. E. W.

I. HÜLPHERS, G., LILLEENGEN, K., & HENRICSON,

T. (1943.) Meddelande fran Sv. Jägareförbundets viltundersökning. Redogörelse för resultaten av de fortsatta undersökningarna av insända harar. [**Report from the Swedish Gamekeepers' Society on *post mortem* examinations. Further data about hares.**]—*Svensk Jakt.* **3.** Reprint pp. 6. **2024**

II. Hülphers, G., Lilleengen, K., & Henricson, T. (1944.) Meddelande fran Sv. Jägareförbundets Viltundersökning. Redogörelse för resultaten av de fortsatta undersökningarna av insända harar fran 1 februari 1943 till 30 april 1944. [**Report from the Swedish Gamekeepers' Society on *post mortem* examination of hares 1943-44.**]—*Svensk Jakt.* No. 6. pp. 233–238. **2025**

I. Details are given of P.M. findings in 303 hares (233 found dead and 70 shot sent in for examination from April 1941 to January 1943, including five photogravures and three tables of findings.

II. Details are given of P.M. findings in 254 hares (205 found dead and 49 shot) sent in for examination from February 1943 to April 1944. —F. E. W.

Hülphers, G., Lilleengen, K., & Henricson, T. (1944.) Meddelande fran Sv. Jägareförbundets Viltundersökning. Redogörelse för resultaten av de fortsatta undersökningarna av insända fasaner, rapphöns, järpar, ripor, duvor, gräsänder samt andra fagelarter fran 1 februari 1943 till april 1944. [**Report from the Swedish Gamekeepers' Society on *post mortem* examination of game birds, 1943-44.**]—*Svensk Jakt.* No. 8. pp. 321–324. **2026**

P.M. findings are described in pheasants, partridges, hazel grouse, ptarmigan, tame pigeons, ring doves, wild duck and other wild birds (all of which were found dead with one exception) sent in for examination from February 1943 to April 1944. The total number of examinations was 75. Two photographic illustrations are given and findings are tabulated.—F. E. W.

See also absts. **2112** (diseases of poultry—a textbook), **2114** (dust and its effects on the respiratory system—a textbook).

PHARMACOLOGY AND THERAPEUTICS

Hrudka, F. (1947.) Zrebčia nakaza. [**Dourine.**] —*Čas. československ. Vet.* **2.** 49–61. [Abst. about 250 words — strictly new contributions.] **2027**

A general discussion. Apart from control by preventing infected animals from passing on the infection a good deal of attention has been given to control by means of chemotherapy. Salvarsan, neosalvarsan and other arsenical compounds have been much used. H. emphasizes the importance of destruction or at least segregation of affected animals.—E. Přibyl.

Pavlovskiĭ, M. A. (1940.) Opyty parenteral'novo vvedeniya maslyanykh rastvorov lekarstvennykh veshchestv. [**The parenteral injection of oil emulsions of therapeutic agents.**]—*Veterinariya, Moscow.* No. 3. pp. 122–124. [French summary.] **2028**

P. speaks of success obtained in the treatment of unspecified disease of the digestive tract and also in what is described as fodder poisoning by the use of 5–10 ml. of a 5 or 10% concentration of ichthyol in oil and with the same dosage of a 15–20% concentration of turpentine in oil given either subcutaneously or intravenously.—E. Cherkesi.

Robinson, M. (1947.) **Iodine and failing lactation.**—*Brit. med. J.* July 26th. 126–128. **2029**

Twenty cases of failure to establish lactation in the puerperium were treated with a 5% aqueous iodine solution for six days, twice a day, the dose being six drops administered orally. The mean output of milk per day was increased by 300%, while massage or saline injections produced much smaller effects in control groups, as compared with no treatment at all.—J. M. Robson.

Stewart, H. C., & May, J. R. (1947.) **Absorption of penicillin given by mouth.**—*Lancet.* **253.** 857–862. **2030**

Penicillin (15,000 units) was given orally to 12 persons under various conditions, namely, on an empty stomach, with food (breakfast), and one, two and three hours respectively after breakfast. Determinations of blood penicillin content at intervals afterwards tended to show better absorption of the penicillin when food was withheld.

In *in vitro* experiments, when penicillin was incubated with samples of gastric juice at different pH, or the pH during incubation was varied so as to simulate pH changes during digestion *in vivo*, there was most destruction of the penicillin at pH less than about 3.

Doses (500,000 units) of commercial penicillin were given to each of four human beings, the penicillin excreted in the urine being recovered and estimated. This recovered product, 70,000 units (3·5%) was again used for dosage, and when administered in oral doses of 15,000 units produced approximately the same urinary excretion as equal doses of the commercial penicillin, thus providing evidence that whatever the molecular arrangement, the different penicillins derived from commercial penicillin were not selectively absorbed.

The oral administration of penicillin (100,000

units) in water produced higher blood penicillin levels during the first 2–3 hours after swallowing than did the same amount given in capsules, whether the capsules were made of untreated or formalin-hardened gelatin. The blood levels of penicillin were lower the further down the gut the capsule was dissolved, but duodenal contents from man and the rat contained no penicillinase producing organisms. When equal doses of penicillin (15,000 units), in a small volume (5 ml.) of water, were introduced by tubes into the duodenum the subsequent blood penicillin levels were higher than when a large volume (250 ml.) was used. These experiments therefore indicate that the main site of absorption of orally administered penicillin is the upper part of the small intestine.

Attempts to determine whether the co-administration of glucose and penicillin orally would give better results than penicillin alone yielded inconsistent results.—J. T. Abrams.

Arnstein, H. R. V., & Cook, A. H. (1947.) **The penicillin produced by** *Aspergillus parasiticus*.—*Brit. J. exp. Path.* **28.** 94–98. **2031**

Details are given of the production of an antibiotic from *Aspergillus parasiticus*, of its concentration, purification and finally of its identification as penicillin-II (penicillin-G or benzylpenicillin). Since the active principle on biological and chemical evidence behaves largely, if not wholly, as penicillin-II, it is suggested that the previous distinctive name of the product, " parasiticin ", should be abandoned.—A. Eden.

Macht, D. I. (1947.) **Thromboplastic properties of penicillin and streptomycin.**—*Science.* **105.** 313–314. **2032**

Moldavsky et al. [see *V. B.* **16.** 409] reported that when penicillin was administered to human beings the clotting time was shortened. The authors have performed some 200 experiments on the clotting of whole blood, the majority being on rabbit and cat blood and a few each on dog and human blood. All brands of amorphous penicillin markedly accelerated the clotting time whether administration was by the intravenous, intramuscular or oral routes, the phenomenon occurring within 15–20 min. The four crystalline penicillins in order of decreasing potency, as to acceleration of clotting time were :– X (hydroxybenzyl penicillin), K (heptyl penicillin), G (benzylpenicillin), F (pentyl penicillin). A small amount of penicillin X when added to penicillin G exerted a synergistic effect.

Streptomycin was found to be markedly thromboplastic for rabbit and cat blood but no details are given.—Malcolm Woodbine.

Fitzgerald, R. J., & Bernheim, F. (1947.) **The effect of streptomycin on the metabolism of benzoic acid by certain mycobacteria.**—*J. Bact.* **54.** 671–679. [Authors' summary copied *verbatim.*] **2033**

A number of nonpathogenic mycobacteria oxidize benzoic acid. This oxidation is inhibited by very small amounts of streptomycin.

The oxidation by these organisms of trehalose, mannitol, fatty acids, and certain other substances is less sensitive to streptomycin.

As the growth of the organisms becomes resistant to streptomycin, so does the oxidation of benzoic acid.

The oxidation of benzoic acid by mycobacteria grown in benzoic acid as the sole carbon source or grown in media containing benzoic acid is more resistant to the inhibiting action of streptomycin.

Streptamine and streptidine which do not inhibit growth do not inhibit the oxidation of benzoic acid.

Benzoic and salicylic acid stimulate the oxygen uptake of pathogenic mycobacteria but are not oxidized by them. This reaction is not inhibited by streptomycin.

Other properties of the action of streptomycin on the oxidation of benzoic acid are described.

Price, C. W., Randall, W. A., Chandler, V. L., & Reedy, R. J. (1947.) **Observations on the *in vivo* and *in vitro* development of bacterial resistance to streptomycin.**—*J. Bact.* **53.** 481–488. [Authors' summary copied *verbatim.*] **2034**

Different species of bacteria and different strains of the same species vary greatly in their *in vitro* resistance to streptomycin and streptothricin.

Resistance of organisms to streptomycin was more readily induced than to streptothricin, and to a greater degree.

Streptomycin-induced resistance of *Eberthella typhosa* is accompanied by marked changes in morphology.

In determining the sensitivity of microorganisms to streptomycin it is important to control the composition of the medium used.

Oral administration of streptomycin to rats results in a marked increase in the numbers of streptomycin-resistant organisms.

Trussell, P. C., Fulton, C. O., & Grant, G. A. (1947.) **Two antibiotics produced by a** *Streptomyces*.—*J. Bact.* **53.** 769–780. [Authors' summary copied *verbatim.*] **2035**

According to Waksman's classification key, the *Streptomyces* employed in this study is distinct from either *S. griseus* or *S. lavendulae*, as indicated from a determinative study of the three streptomycetes on 36 diagnostic media that included 7 carbon and 10 nitrogen sources. Purity of the

isolate was assured by replating and by bacterial spectrum studies on culture filtrates from individual colonies of the mother culture.

Accordingly, the premise seems acceptable that the isolate is an organism not previously described and that it elaborates a mixture of antibiotics. Whether this mixture is composed of only two separate active fractions is as yet uncertain. Evidence favors the identity of one fraction with streptomycin. All that may be presumed of the second fraction at present is that it is like streptothricin.

Preparations containing the streptothricin like component are toxic. The antibiotic mixture produced by this new isolate of *Streptomyces* has been found to possess *in vivo* activity.

LATVEN, A. R., & WELCH, A. D. (1947.) **Evaluation of chemoprophylactic activity by the subcutaneous implantation of pellets of sulfonamides in mice.**—*J. Pharmacol.* **91.** 161–168. **2036**

A method of implanting hard compressed pellets (25 mg.) of sulphonamides in mice is described; very gradually decreasing concentrations of the drug are maintained in the blood for several weeks. Twice as many pellets of sulphadiazine as of sulphamerazine must be implanted in order to maintain equivalent concentrations of the drug in the blood. The concentration of free drug found necessary for protection of 50% of mice against a lethal haemolytic streptococcal infection was, for sulphadiazine 0·8 and for sulphamerazine, 2·4 mg. per 100 ml. of blood. This difference between the two drugs was seen only at critically low blood levels since the concentration required to protect 100% of mice did not differ. Against lethal pneumococcal (Type I) infection, the concentration for protection of 50% of mice was, for sulphadiazine, 16·4 and, for sulphamerazine, 14·8 mg. %.—J. M. ROBSON.

FARKAS, H. (1947.) **Comparative action of bromine and iodine on toxic enzymes of** *Staphylococcus aureus* **and** *Streptococcus pyogenes.* —*J. Bact.* **53.** 401–406. [Author's summary copied *verbatim.*] **2037**

Minimum suppressive doses of bromine and iodine for different toxic enzymes of pathogenic cocci have been determined.

The coagulase of *Staphylococcus aureus* was attacked and destroyed by bromine at a concentration of 0·3 per cent, whereas iodine had the same effect only at a concentration of 0·8 per cent.

With the coagulase of *Streptococcus pyogenes* iodine in a low concentration of 0·04 per cent had the same effect as bromine in a concentration of 0·2 per cent.

For the hemolysins of *S. aureus* it was found that bromine in a concentration of 0·075 per cent destroyed the activity, whereas iodine exerted the same effect only in a concentration of 0·4 per cent.

Hemolysins of *S. pyogenes* were also more readily attacked by bromine than by iodine. The former stopped hemolysin action in a concentration of 0·02 per cent, whereas the latter was effective only in a concentration of 0·08 per cent.

Fibrinolysin of *S. pyogenes* was eliminated by bromine in a concentration of 0·06 per cent and by iodine in a concentration of 0·04 per cent.

The spreading factor was destroyed by bromine in a concentration of 0·2 per cent, whereas iodine had to be used in a concentration of 0·75 per cent in order to exert the same effect.

PETERSEN, E. H. (1947.) **Field studies of sulfamerazine in the control of pullorum and some other diseases of domestic birds.**—*N. Amer. Vet.* **28.** 298–300. **2038**

P. studied the prophylactic action of sulphamerazine against *Salmonella pullorum* infection in poults and chicks. At 0·4% in the mash losses were reduced in poults originating from *S. pullorum*-infected breeder stock when administered for the first five days after hatching. In one group of 1,000 poults the mortality was 2·3%, and in another group of 1,476 poults, the mortality was 6·1%. In eight outbreaks of pullorum disease involving 3,795 chicks and poults, the drug in the mash was not however very effective. At 0·5% in the mash for five and six days, it was ineffective in an outbreak of *S. typhimurium* infection in poults and in an outbreak of blackhead in brooder house poults.—MALCOLM WOODBINE.

GUILHON, J. (1946.) Traitement de l'actinomycose des bovidés par le chlorure mercurique. **[Treatment of bovine actinomycosis by mercuric chloride.]**—*Rec. Med. vét.* **122.** 529–533. **2039**

Actinobacillus infection of the tongue in cattle was treated by the subcutaneous injection of 10 ml. of a 1 : 1,000 aqueous solution of mercuric chloride daily for three days then at intervals of six days. The lesions began to regress after the third or fourth injection and had completely disappeared after the eighth or ninth injection. One animal which had received six injections relapsed. For an animal of 300–500 kg. a total of 80–90 mg. of mercuric chloride required to be administered.

—ALAN A. WILSON.

SALISBURY, R. M. (1947.) **The toxicity of D.D.T. for poultry.**—*Aust. vet. J.* **23.** 361–362. **2040**

In an address to the Queensland Division of the Australian Veterinary Association Salisbury recounts experiences with the toxicity of D.D.T. for poultry and cats during a campaign against the stickfast flea (*Echidnophaga gallinacea*).

Of 1,718 fowls dipped in a suspension containing 2% D.D.T. 4·55% died, while of 171 ducks 21·04% died, of 28 cats 64·28% died, but none of 100 dogs was affected. The high mortality rates in ducks is attributed to preening and in cats to licking.

Experiments on fowls revealed that a diet which was deficient in calcium markedly predisposed the fowls to toxic effects.—H. McL. G.

COBBETT, N. G. (1947.) **Preliminary tests in Mexico with DDT, cube, hexachlorocyclohexane (benzene hexachloride), and combinations thereof, for the control of the cattle fever tick,** *Boöphilus annulatus.—Amer. J. vet. Res.* **8.** 280–283. **2041**

Technical D.D.T. sprayed in an emulsion at the rate of five U.S. gal. per animal killed nearly all *Boöphilus annulatus* on cattle within 24 hours at 1·0–3·0% concentration. Nymphal re-infestation was prevented for three weeks. Hexachlorocyclohexane (30% γ-isomer) at 1·0%, killed all the ticks within the same period, and re-infestation with nymphs occurred during the third week after spraying. An emulsion containing 1·0% of each of the above insecticides gave the best results. A 5·0% cube solution failed to kill all adult female ticks on cattle. The animals used were exposed to considerable rainfall during the test period.

—L. DAVIES.

DODSON, M. E. (1947.) **"Gammexane" for the treatment of sarcoptic and demodectic mange in dogs and otodectic mange in cats.—** *Aust. vet. J.* **23.** 358–359. **2042**

A 1·0% suspension of the γ-isomer of hexachlorcyclohexane in liquid paraffin was an effective treatment, when repeated on alternate days for a week, for sarcoptic and demodectic mange in dogs and otodectic mange in cats.

—H. McL. GORDON.

THORBURN, J. A. (1947.) **The use of "Gammexane" in veterinary practice.—***J. S. Afr. vet. med. Ass.* **18.** 120–128. **2043**

T. concludes that lice may be controlled by a single dipping in a 0·01% wash (in every case, the percentage refers to the gamma isomer content), or by a double application of a 0·005% wash or 0·5% dusting powder at 14-day interval. Flea infestation can be prevented by weekly applications of 0·005% to 0·01% wash, or 0·5% dusting powder. Four applications per year of a 0·5% wash at the rate of 200 mg. per sq. foot of house or dairy will control fly population, and weekly dipping of cattle in 0·005% wash controls *Musca domestica, Stomoxys calcitrans* and *Hippobosca rufipes.* A single dipping in 0·01% wash eradicates the sheep ked, and dipping in 0·05% wash controls blowflies (*Lucilia* and *Chrysomia* spp.). Regular weekly dipping in a 0·005% wash effectively controls mange. Recommendations for tick control vary, but regular weekly dipping in 0·005% wash appears to control most of the African ticks, slight variations in the dipping interval being dictated by differences in the life cycles.

Benzene hexachloride does not appear to deteriorate on standing, in any of the forms in which it has been used, but, after determining the minimum concentration of a dip-wash necessary for controlling a parasite, it is desirable to recommend a concentration 30% in excess of this to allow for factors which influence wetting properties of the wash. A gradual exhaustion of benzene hexachloride from the bath occurs with most preparations, but two dispersible powders did not show any diminution in strength even after dipping large herds of cattle every seven days in the washes. Serial dipping in benzene hexachloride washes does not appear to harm stock.

—G. B. S. HEATH.

GUILHON, J., & POUGET, J. (1945.) Essais de traitement de la gastro-entérite vermineuse du mouton et de la chèvre par la thiodiphénylamine. **[Treatment of verminous gastro-enteritis in sheep and goats with phenothiazine.]—***Bull. Acad. vét. Fr.* **18.** 47–57. **2044**

A record of ten experiments on sheep, from 1–30 animals in each, and three experiments on goats (nine animals altogether). The dose of phenothiazine was varied, and the results were judged by egg counts and by body weight records.

In discussion of the results, attention is paid to the question of dosage. In the sheep, the minimal active dose was about 300 mg. per kg. body weight repeated on two or three successive days: this dose works out at less than that which is effective in horses, and at somewhat less than that which is effective in cattle. The authors consider that this is due to the relatively greater capacity of the digestive system in sheep and goats.

The worms which are most sensitive are those which ingest the blood of the host, possibly because such worms ingest a compound of the drug in the blood, but the action may result from absorption, through the cuticle, of the drug in the stomach or bowel.—J. E.

CHAPMAN, F. A. (1947.) **The use of sulphamezathine in the treatment of polyarthritis (Navel-ill) in suckling pigs.—***Vet. Rec.* **59.** 626. **2045**

A report of an outbreak of a polyarthritis of undetermined aetiology occurring in suckling pigs. It is claimed that subcutaneous administration of 15 ml. of sulphamezathine [sulphamethazine] sodium (16% solution) effected a cure.—J. A. J. V.

JENSEN, H. (1942.) Nogle Forsøg paa lokal

Behandling af Hudtumores med Solutio ferri chloridi. **[Experimental treatment of skin tumours with ferric chloride solution.]**—*Maanedsskr. Dyrlaeger.* **54.** 42–44. **2046**

After experience of the cure of a tumour [of unspecified natûre] in a human being by means of an excision and the application of ferric chloride solution as a haemostatic J. treated a skin cancer at the base of the ear in a dog adopting a similar procedure. The wound healed and J. refers to the treatment as a cure. He suggests that ferric chloride solution may be of value in the treatment of certain tumours.—J. E.

GARM, O. (1946.) Luftposeempyemer og deres behandling. **[Empyema of the guttural pouches of horses and its treatment.]**—*Skand. VetTidskr.* **36.** 401–423. [English summary.] **2047**

G. describes the surgical methods used at the Norwegian Veterinary College in five cases of empyema of the guttural pouches in horses. Drainage through the base of the lateral compartment was carried out by incision into the submandibular region, or from the medial compartment by perforation of the wall immediately below the point of the hyoid bone. The medial compartment was drained by the Dieterich-Sands method, which is illustrated in the text.

Reference is also made to three cases in which local sulphonamide treatment was ineffective.

—F. E. W.

COUVY, M. L. (1947.) Quelques notes sur le traitement du tétanos. **[The treatment of tetanus.]**—*Bull. Acad. Nat. Med.* **131.** 143–148. **2048**

Urotropine is a drug which was introduced for use as a urinary antiseptic. In an acid medium it liberates formaldehyde, which produces an antiseptic action. For use as a urinary antiseptic it was given together with a substance, such as acid sodium phosphate, which would make the urine acid, and at one time it was considered a very effective drug. Nowadays it has been largely superseded by more active substances such as mandelic acid and the sulphonamides.

Urotropine was also suggested for use in infections in other sites and notably in the gall-bladder and in the central nervous system. Its use was based on a mistaken conception of its mode of action since the reaction in these sites is essentially neutral and under these circumstances urotropine could not liberate formaldehyde and produce an antiseptic action.

There are certain investigations which suggest that urotropine may increase the permeability of the barrier between the blood and the cerebrospinal fluid and that it may thus promote the passage of drugs and various antibacterial substances present in the blood into the cerebrospinal fluid. This evidence is based on the work of MUTERMILCH (1926 and 1927), which is, however, not very convincing. The effect of urotropine on the permeability of the blood-cerebrospinal fluid barrier needs further investigation.

On the basis of this evidence C. has treated with success cases of tetanus with a combination of antiserum and urotropine. He has used the following technique :–(1) The serum is injected intravenously or, if this is not possible, subcutaneously. (2) Half an hour later 1 gramme of urotropine (0·5 g. in children) is injected intravenously or subcutaneously. (3) Half an hour later a second injection of serum is given. In 17 cases so treated there was only one death.

C. quotes a number of similar investigations in which the results appeared to be satisfactory.

There is also reference to the treatment of syphilis of the central nervous system and of trypanosomiasis with the combination of urotropine and an arsenical, again with apparently favourable results.—J. M. ROBSON.

ZAYANCHKOVSKIĬ, I. F. (1945.) Mongol'ski sposob povala loshadĭ. **[Treatment of tympanites with milk.]**—*Veterinariya, Moscow.* No. 4–5. p. 43. **2049**

Drenching with 0·75 litre of milk was found to produce immediate relief in cows suffering from acute tympanites and is recommended as a treatment.—L. LEVENBOOK.

KRASIL'NIKOV, N. A. (1944.) Vliyanie lechebnykh preparatov na mikrofloru ran. **[Effect of therapeutic preparations on the microflora of wounds.]**—*Zh. Mikrobiol., Moscow.* No. 9. pp. 63–69. **2050**

A general discussion of the flora of infected wounds, with some reference to the interaction of the several types of bacteria, particularly with reference to those which have inhibitory influences on others. There is mention of the use of antibiotics. No new information.—K. A. ALLEN.

See also absts. **1971** and **1972** (pentamidine), **1974-1976** (coccidiosis), **1978** (streptomycin in malaria), **1979** (piroplasmosis), **1980** (anaplasmosis), **1982** (sulphonamides and virus infections).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

OVERMAN, R. R. (1946.) **Permeability alterations in disease.**—*J. Lab. clin. Med.* **31.** 1170–1173. **2051**

The extra-cellular fluid volume was measured (using the sodium thiocyanate dilution method) in normal monkeys and in cases of simian malaria. The results obtained, together with observations on human patients affected with diseases character-

ized by marked elevation of temperature, indicate that the pyrexic state is associated with generalized permeability alterations.—MARY C. LOBBAN.

FELDBERG, W., & HEBB, C. (1947.) **The effects of magnesium ions and of creatine phosphate on the synthesis of acetylcholine.**—*J. Physiol.* **105.** 8–17. **2052**

Synthesis of acetylcholine by saline extracts of acetone-dried brain was accelerated by Mg ions in the presence of citrate, but in the absence of citrate Mg had little effect. The synthesis was increased 2–3 times in non-dialysed saline extracts and up to 20 times with dialysed extracts by the presence of Mg ions, which may be replaced by Mn, but not by Ca, Zn or Co ions.

Creatine phosphate can replace adenosine triphosphate (ATP) in the synthesis of acetylcholine by non-dialysed extracts of acetone-dried brain, but cannot do so with dialysed extracts unless either activator or muscle adenylic acid is also added. Muscle adenylic acid cannot be replaced by either yeast adenylic acid or by adenosine. It is suggested that creatine phosphate involves adenylic acid as a phosphate carrier, the ATP formed being the phosphate donator.—A. E.

BARCROFT, J., & YOUNG, I. M. (1945.) **Internal oxygen environment of the brains of post-mature rabbit embryos.**—*J. exp. Biol.* **21.** 70–76. **2053**

Post-mature foetuses were obtained from female rabbits which had been injected with 100 international units chorionic gonadotropin intravenously and 5 mg. progesterone subcutaneously on the twenty-fifth day of pregnancy. This prolonged the period of gestation and the foetuses grew on an average from about 45 g. to about 80 g. between the thirtieth day and thirty-sixth day. The increase in foetal weight from the twenty-fifth day onwards is roughly in linear relation to age. There appears to be no commensurate increase in placental weight and it is doubtful whether there was any growth of the foetal placenta after the thirty-first day.

The foetuses were exposed by laparotomy under urethane anaesthesia, care being taken to avoid any disturbance of the relationship of foetus and placenta. The foetal head was exposed through an incision of the uterine wall and the skin removed from the top of the skull so that blood could be withdrawn under paraffin from the posterior fontanelle by means of a needle inserted in the middle line of the anterior fontanelle.

The percentage oxygen saturation of the blood from the posterior fontanelle which is about 50% at 31 days falls progressively to 20% or less on the thirty-fifth day. The oxygen capacity of the blood rises from the thirtieth day onwards in the post-mature foetuses.

The authors consider that the increased degree of anoxaemia associated with post-maturity might be the stimulus causing active intra-uterine respiratory movements which occur at this time. The death of 36-day foetuses is probably due to asphyxiation or inanition.—F. R. BELL.

ANON. (1946.) Sudation. [**Sweating.**]—*Encyclopéd. vét. périod.* **3.** 365–367. **2054**

This is an annotation on the physiology of sweating in domestic animals, especially the horse, and deals particularly with the work of French authors. The condition known as "dry-sweating" or anhydrosis in the East is not dealt with beyond the statement that such anomalies are very exceptional.—M. C.

MENKIN, V. (1947.) **The further effect of the leukocytosis-promoting factor of exudates when injected in connection with inflammation.**—*Arch. Path.* **43.** 566–569. [Author's summary copied *verbatim.*] **2055**

[In previous studies Menkin (1940) found in exudative material a factor capable of reasonably explaining the leucocytosis frequently accompanying the inflammatory processes.]

The leukocytosis-promoting factor when injected into the blood stream of an animal with an already existing inflammation raises and maintains for a prolonged interval the number of circulating leukocytes. Under such circumstances the leukocytosis is sustained for several days longer than when there is an inflammation alone or when the leukocytosis-promoting factor is introduced without a concomitant inflammation. Some observations suggest also that this factor when injected several days prior to an acute inflammation of the pleura likewise tends to maintain a high leukocyte level in the blood for longer intervals. The clinical implications of these findings are discussed.

MCDOUGALL, E. I. (1947.) **The variation in the copper content of the blood of normal sheep.**—*J. agric. Sci.* **37.** 329–336. **2056**

In these experiments extending over three lambing seasons normal sheep were used. Six ewes were bled at monthly intervals from October to April. At lambing the ewes and lambs were bled, after which six lambs were bled regularly until they were a few months old. All were on grass and received supplementary feeding towards the end of pregnancy and anthelmintic treatment with copper sulphate and nicotine. Five foetal lambs and their dams were also studied and for one season five ewes transferred the previous spring from the "swayback" area of Derbyshire were included. The ewes usually lambed in February or early March so there was at least one bleeding after lambing. While there was considerable

variation in the blood copper values of the ewes there were no changes which could be associated with either pregnancy or lactation. There were indications that the anthelmintic treatment had some influence on the blood copper. Comparison of the blood of lambs and their ewes showed that the blood copper is a changing quantity at birth, being lower in the foetus, variable in the lamb a few hours after birth and higher after some days than in the ewe. In unweaned lambs the blood copper values are high in the first two weeks of life and decrease over the next ten weeks. The blood copper values for the lambs were more uniform than those for the ewes. In the blood copper values for the ewes there were significant differences between animals and between the averages of the seasons' results. The significance of the results is discussed.—ALAN A. WILSON.

SMITH, S. G. (1944.) **Evidence that the physiologic normal hemoglobin value for adult dog blood is 18 grams for 100 c.c.**—*Amer. J. Physiol.* **142.** 476–482. **2057**

Puppies were fed a diet adequate in all blood-building factors according to modern nutritional standards and haematological examinations were made of their blood at regular intervals throughout the growing period and into adult life. The mean Hb value at 2–3 months of age was 10·5 g. %, the r.b.c. count rising over the same period from 4·62 –7·59 millions per c.mm. and the haematocrit from 34·4–54·1 vol. %. These high values were not due to dehydration or to cobalt polycythaemia as the yeast employed as a source of the vitamin B complex contained only 2·8 p.p.m. of Co.

The Hb values of 60 dogs selected without special provision for including B complex factors in the diet averaged 15·1 g. % (range 10–22 g. %). S. therefore concludes that when all known blood-forming factors are included in the diet, the physiological normal Hb value in dogs is about 18 g. % with corresponding values for the r.b.c.'s of 7·59 millions per c.mm. and a haematocrit value of 54·1 %.—A. EDEN.

ANDREASEN, E., & OTTESEN, J. (1944.) **Significance of the various lymphoid organs to the lymphocyte production in the albino rat.**—*Acta path. microbiol. scand.* Suppl. No. 54. pp. 25–32. [Authors' summary copied *verbatim.*] **2058**

Labelled phosphate is administered to adult rats by subcutaneous injection. After experimental periods of 2 and 42 hours the desoxyribose nucleic acid present in the various lymphoid organs is extracted. By comparison of the activity of 1 mg. nucleic acid P with the activity of 1 mg. plasm phosphate P, data on the rate of the desoxyribose nucleic acid formation are obtained.

A large nucleic acid turnover is found in lymphoid organs. The most rapid renewal of nucleic acid takes place in the thymus, amounting to 2–5 times the rate of renewal found in lymph nodes, spleen and Peyer's patches.

Various considerations make it likely that the nucleic acid turnover affords an estimate of the lymphocyte production in the various lymphoid organs. Granting this, the calculation shows the thymus to be the most important lymphocytopoietic organ. The lively lymphocyte output in the lymphoid organs does not support the assumption of a circulation.

I. ANON. (1947.) **The role of the microflora of the alimentary tract of herbivora with special reference to ruminants. I. General introduction.**—*Nutr. Abstr. Rev.* **17.** 1–2. **2059**

II. BAKER, F., & HARRISS, S. T. (1947.) **The role of the microflora of the alimentary tract of herbivora with special reference to ruminants. II. Microbial digestion in the rumen (and caecum), with special reference to the decomposition of structural cellulose.**—*Ibid.* **17.** 3–12. **2060**

III. PHILLIPSON, A. T. (1947.) **The role of the microflora of the alimentary tract of herbivora with special reference to ruminants. III. Fermentation in the alimentary tract and the metabolism of the derived fatty acids.**—*Ibid.* **17.** 12–18. **2061**

IV. MCNAUGHT, M. L., & SMITH, J. A. B. (1947.) **The role of the microflora of the alimentary tract of herbivora with special reference to ruminants. IV. Nitrogen metabolism in the rumen.**—*Ibid.* **17.** 18–31. **2062**

V. KON, S. K., & PORTER, J. W. G. (1947.) **The role of the microflora of the alimentary tract of herbivora with special reference to ruminants. V. The synthesis of vitamins in relation to requirements.**—*Ibid.* **17.** 31–37. **2063**

I. Microbial digestion may be said to occur in all species but mainly in the large intestine where the products of such digestion are not readily available to the host. In the ruminant, however, the products of microbial activity in the rumen are made available by subsequent digestion.

It seems that the flora of the rumen includes a characteristic nucleus and a variable population of associated species which may undergo quantitative changes with changes of diet. For example, it has been found that the amount of gas produced from glucose in the rumen of a sheep is much greater when the animal is given lucerne or clover hay owing to the presence of yeast-like organisms and iodophile cocci, than when fed poor grass hay. Similar changes of the population of ciliates have also been noted, their numbers

markedly increasing when starch and protein were added to the diet of a sheep being fed on poor hay. A seasonal variation in the number of micro-organisms present in the rumen has also been reported.

II. Microbial digestion in the pasture-fed animal involves the disintegration of organized plant structures which can be conveniently studied by microscopic and X-ray spectrographic methods. Such methods have shown that the breakdown of structural cellulose and other carbohydrates is brought about by iodophile cocci which are found both free in ruminal and caecal liquids and also attached to the structural material being acted upon. The organisms appear as rods or vibrios, together with small, large and giant coccoids; giant elipsoidal and other elongated forms also being seen. It is uncertain, however, if all these different forms represent distinct microbial species.

The role of oligotrich ciliates in the digestion of structural cellulose is still uncertain but they do not appear to play much part in this process since on their destruction with copper sulphate, there is no interference with cellulose digestion.

The bacteria cause a characteristic erosion fissure or enzymic cavity in the structural cellulose and a study of the formation and appearance of such cavities provides a means of studying the activities of the organisms. Bacteria appear to invade the plant structures in different ways, most commonly by enzymic penetration of the lamella of adjoining cells or the lumen of fibres or by invasion of fractures and penetration of the intermicellar network.

The α-cellulose fraction is the portion attacked but its breakdown may be retarded by lignin or other interfering substances. There is no doubt, however, that prolonged chewing facilitates the bacterial disintegration of structural cellulose.

Starch is mainly digested in the so-called gastric sac of rumen ciliates and stored as glycogen in the tissues of the protozoa. Starch digestion is, however, still possible after the removal of the ciliates, iodophile cocci and vibrios being the predominant forms observed associated with this process.

Utilization by the host of the products of microbial synthesis is dependent on the death of the organisms during their passage through the digestive tract of the host. The ciliates appear to be completely destroyed since they are absent from the faeces. The iodophiles likewise are no longer demonstrable in the faeces and in non-ruminants a reduction of iodophiles is demonstrable during the passage of the food residues from the caecum to the rectum.

III. Acetic acid is the predominant acid produced by bacterial fermentation of carbohydrate in the rumen or in the large intestine of non-ruminants. Propionic and butyric acids are also produced but in lesser quantities.

The acids are absorbed directly into the blood stream, in which their concentration varies directly with the ingestion of food. They are present in quantity in the rumen and reticulum but are absent from the abomasum and are absorbed directly from the organ in which they are produced, probably by simple diffusion.

Acetic acid is rapidly metabolized in the body. It may be oxidized directly or built up into fat or carbohydrate. Propionic acid can act as a precursor of glucose or glycogen. The fate of butyric acid, is, however, still uncertain.

IV. It has been known for many years that micro-organisms in the rumen utilize not only soluble protein but also non-protein nitrogenous substances for the formation of their own protein. On their subsequent death, such organisms supply the host with a supply of protein of first-class biological value. Attempts to replace dietary protein with non-protein nitrogenous substances have not, however, proved successful.

Bacteria are mainly responsible for the synthesis of protein so that the utilization of nitrogen, chiefly from ammonia, depends on the rate of growth of the bacteria which in turn depends on the amount of available starch. If non-protein nitrogenous substances or soluble protein are present in excess of bacterial requirements, then nitrogen will be wasted. Indeed, so much ammonia may be absorbed into the blood stream that toxic effects may be produced. It seems, therefore, that the addition of non-protein nitrogenous substances to the diet will only be beneficial when the diet is rich in starch and poor in protein. If urea be given, it should not supply more than 40% of the dietary nitrogen and owing to its rapid conversion into ammonia it must be intimately mixed with the other foodstuffs which should be rich in starch or sugar, to ensure that it dissolves slowly in the rumen liquids and that the acids arising from the carbohydrates will neutralize any excess ammonia. Non-protein nitrogenous substances have only half the value of protein nitrogen in the diet.

V. Vitamin synthesis takes place in the intestinal tract of animals, from bacterial activity either in the rumen or large intestine. In the ruminant, the vitamins become generally available to the host but in other animals, since the main site of their formation is the large intestine, it is only under special circumstances such as habitual coprophagy or refection that they do so.

Ruminants are independent of an exogenous source of all the members of the vitamin B com-

plex. With the possible exception of nicotinic acid which may be synthesized within the tissues or be replaced by tryptophane, all these vitamins arise from bacterial synthesis in the rumen. The fat soluble vitamin K is also synthesized within the rumen in fully adequate amounts to supply the host. Ruminants are also independent of a supply of vitamin C but the synthesis of this vitamin does not occur in the rumen where in fact it is rapidly destroyed.

Young ruminants for the first few weeks of life must, however, be supplied with dietary vitamins, both a biotin and riboflavin deficiency being readily set up in calves on experimental diets. Colostrum is a good source of vitamins and supplies all the requirements until the flora of the intestinal tract becomes established.—J. A. N.

ABELOOS, M. (1946.) Croissance relative du squelette de la face chez les ruminants. [**Relative growth of the bones of the face in ruminants.**—*C. R. Soc. Biol. Paris.* **140.** 957–958. **2064**

In comparisons of growth ratios of the length of the osseous palate and inferior maxilla in foetal calves and lambs as related to overall skeletal growth it was found that the length of the palate is associated with growth of the skull in keeping with general skeletal development rather than with the independent growth of facial bones. —C. W. O.

SAXTON, J. A., & SILBERBERG, M. (1947.) **Skeletal growth and ageing in rats receiving complete or restricted diets.**—*Amer. J. Anat.* **81.** 445–475. [Authors' summary copied *verbatim.*] **2065**

In rats of the Osborne-Mendel (Yale) strain, the course of the skeletal time curve depends on the sex of the animal and the diet fed. Regardless of the composition of the diet females show a faster rate of skeletal development than males. Liver or milk given in addition to a basal diet accelerates growth and ageing of cartilage and bone more than sugar or starch given as supplements. Degenerative changes in the joints set in at an earlier age in females and are more common and more severe in liver-fed animals.

Drastic restriction of diet begun after weaning and continued through life decreases the rate of proliferation and the regressive changes in the epiphyseal and articular cartilages but prolongs the period of growth. Endochondral and periostal ossification are diminished; but bone diseases do not result. Although growth of the male as measured by body length was more retarded than that of the female, the length of the tibia in the male exceeded that of the female. Genetically determined sex differences of skeletal growth may thus be asserted at the expense of other tissues. Refeeding leads to resumption of skeletal growth even in adult and old animals.

TRUEX, R. C., & COPENHAVER, W. M. (1947.) **Histology of the moderator band in man and other mammals with special reference to the conduction system.**—*Amer. J. Anat.* **80.** 173–201. **2066**

An account is given of a histological study of the moderator band from the hearts of several mammals, including the sheep, pig, calf, ox, cat, monkey and man, the object of the investigation being to determine the proportions of cardiac muscle, Purkinje fibres and connective tissue in bands of varying thickness from several species. Of the band elements studied, the amount of cardiac muscle was the most variable, the smaller bands possessing little or no muscle, while Purkinje tissue was the most constant. Species differences in arrangement and staining reactions of the Purkinje fibres were noted. The Purkinje fibres of the ungulates are more than twice the diameter of the cardiac muscle fibres; in the other species studied the size difference is much less marked.—MARY C. LOBBAN.

PASQUALINI, R. Q. (1945.) **Tubular resorption test. With results obtained in nineteen cases of acute nephritis.**—*J. Lab. clin. Med.* **30.** 51–55. **2067**

A tubular resorption test using the antidiuretic principle of the posterior pituitary is described for the estimation of renal tubular function. Results obtained on the human subject in cases of acute nephritis indicate that tubular function is affected at a very early stage in this disease, and that, in most cases, the impairment in tubular function outlasts all other signs of nephritis. The physiological principles underlying the test are discussed.—MARY C. LOBBAN.

LANDBOE-CHRISTENSEN, E., & BOHN, C. L. S. (1944.) **Topographical aspects of the Brunner glands in swine.**—*Acta path. microbiol. scand.* Suppl. No. 54. pp. 659–670. [In English.] **2068**

In view of the possible association of Brunner glands with the anti-anaemic principle, the authors have investigated their occurrence in the intestine of the pig. The extent of Brunner glands in six-month-old bacon pigs 75–80 kg. in weight was found to average 62 cm., the approximate length of the duodenum. As to distribution, the greatest concentration was found in the first 4–5 cm. For the following 20–30 cm. the glands were still densely aggregated in groups, but narrow linear intervals separated their mosaic-like arrangement. The terminal area presented a marked change in that glandular islands were

arranged in longitudinal columns or streaks. The findings indicate the necessity for additional experiments to determine the function of these glands.—C. W. OTTAWAY.

See also absts. **2083-2085** (semen and spermatozoa), **2086** and **2087** (sex hormones), **2094-2097** (heat regulation and acclimatization), **2115** (sexual endocrinology of non-mammalian vertebrates—a monograph), **2116** (laboratory guide to animal biology—textbook), **2117** (anatomical terms: their origin and derivation—textbook).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

TSCHERMAK, K. (1947.) Tierkörperbeseitigung in Osterreich! **[Disposal of carcasses in Austria.]**—*Wien. tierärztl. Mschr.* **34.** 100–104. **2069**

T. states that the methods applied in practice for the disposal of carcasses usually fall short of legal requirements. He considers that regulations dealing with burying of carcasses can never be adequately enforced, and that the only method of disposal should be incineration, that special salvage centres for carcass disposal should be built, and managed as public hygiene institutions by the local authorities.—A. MAYR-HARTING.

DOLEŽAL, J. (1947.) Dozor na obchody s potravinami živočisného původu v Praze. **[The inspection of food of animal origin in Prague.]**—*Čas. československ. Vet.* **2.** 123–128. **2070**

Public health regulations were made in 1946 covering inspection of all food of animal origin by veterinary officers and of all establishments in which meat, milk and other food is prepared, kept in stock, transported and distributed.—E. PŘIBYL.

ANON. (1947.) **Developments in military medicine during the administration of surgeon general Norman T. Kirk.**—*Bull. U.S. Army med. Dep.* **7.** 594–646. **2071**

The activities, organization and growth of U.S. Army Medical Services during the war are described. Much of the article deals with human medicine but the work of the veterinary services which are a division under the Surgeon General's office is also described.

All foodstuffs of animal origin for the armed forces were inspected by the Veterinary Corps for soundness, grade and also in respect of the manner in which they were packed. At the peak period a daily average of 36,137,901 pounds of meat plus dairy products was inspected. Food of all kinds purchased outside the U.S.A. was also inspected.

The supply of milk to overseas troops raised problems especially in the Pacific area. Dry skim milk was used largely but was not suitable for hospital patients. A method for the supply of frozen fresh milk to hospital ships was developed by the port veterinarian at Boston in 1944, this was the first time that fresh homogenized pasteurized milk was successfully frozen. It was later shipped to the Pacific area and became the standard product for hospital use.

Periodic ophthalmia in horses was studied and it was found that the addition to the diet of crystalline riboflavine was of value as a preventative.

The isolation and transmission of the virus of equine influenza was also studied. In the field of antibacterial warfare work was done on the prevention of rinderpest and a new vaccine [avianized virus] was developed.

In 1944 a Registry of Veterinary Pathology was established under the auspices of the National Research Council at the Army Institute of Pathology.

7,118 Chinese military animals were transported by air in the China-Burma campaign in 1945.

Following the war the civilian veterinary services in Italy, Germany, Japan and Korea were assisted and reorganized.—M. C.

TINNEY, H. R. (1947.) **The role of the veterinary staff of the Commonwealth Department of Commerce and Agriculture [Australia].**—*Aust. vet. J.* **23.** 262–266. **2072**

In a paper presented at the Brisbane meeting of the Australian Veterinary Association the work of the veterinarians in the Dept. of Commerce and Agriculture of the Commonwealth of Australia is described. There are 16 officers employed at present. The chief activity of the officers is the supervision of the inspection of meat for export from Australia. In addition they have responsibilities for the inspection of various other export foodstuffs, *e.g.*, dried and canned fruits, canned and dehydrated vegetables, fruit juices, jams, honey and sauces. The duties and responsibilities of veterinary officers in relation to meat export are detailed.—H. McL. GORDON.

—. (1946.) **The Army Veterinary Service in South-East Asia Command.**—*J. R. Army vet. Cps.* **17.** 69–73. **2073**

A short account is given of the development and work of the veterinary corps from the time Japan entered the war. Animal transport was essential in the mountainous jungle country on the North-East frontier of India. Surra was common and mobile anti-surra units were used. Epizootic lymphangitis was common and an experimental treatment unit made trials. It is stated promising results were being obtained but no details are given. Veterinary officers accompanied the Chindit expeditions.

For the supply of meat, cattle, sheep and goats had to be transported from India in very large numbers : disease, especially rinderpest, was prevalent and constant effort was required to reduce losses.—M. C.

HICKMAN, J. (1947.) **The veterinary and remount service with the control commission for Germany.**—*J. R. Army vet. Cps.* **18.** 93–104. **2074**

The arrangements made to restore the veterinary services following the collapse of Germany in 1945 are outlined. Under the Nazi régime the veterinary services were part of the Ministry of Health but have now reverted to the Ministry of Agriculture.

At the time of the collapse F. & M. disease was widespread throughout Germany. Supplies of vaccine were not available from the island of Reims which was in the Russian zone. Some vaccine was obtained from Denmark, vaccine was also prepared at the Behringwerke institute at Eystrup and part of the Hanover abattoir was converted into a F. & M. disease virus producing centre.

The incidence of glanders proved to be very much lower than was expected. Dourine which had not occurred in Germany for many years appeared in Schleswig-Holstein, infection having probably been introduced by refugee horses from the East. Trypanosomes were detected in blood by fluorescence microscopy. It is estimated that about 50% of the cattle population are reactors to the tuberculin test. The control and eradication of TB. is a serious economic problem. It is stated that trichomoniasis was recognized for the first time in Germany in 1946 when an outbreak occurred in Hanover. [This is obviously an error as Riedmuller described and named the causal organism in 1928.] The Hanover veterinary school was re-opened in October 1946. Its buildings had been badly damaged in air raids. The students spend two weeks in each term clearing rubble and helping in rebuilding.—M. C.

—. (1946.) **Amalgamation of Veterinary and Remount Service in India.**—*J. R. Army vet. Cps.* **17.** 98. **2075**

A short note records the amalgamation of these two services as from March 1st, 1946, under the directorship of the Director of Veterinary Services. The Royal Army Veterinary Corps had taken over the Remount Services in the United Kingdom and in all overseas areas except the Far East in 1941.—M. C.

HICKMAN, J. (1946.) **Administrative history of the Veterinary and Remount Branch, 21st Army Group, on the continent. From D day to VE day.**—*J. R. Army vet. Cps.* **17.** 66–69. **2076**

The veterinary history of the campaign is divided into four phases namely the initial landings and establishment of a bridgehead ; the breakthrough at Falaise and pursuit to the Meuse-Escaut Canal ; the building up of an advance base in Belgium and the clearing of Antwerp ; and the assault across the Rhine. Captured horses were collected and distributed to farmers, horsed transport units were formed to ease the strain on motor transport and were equipped almost entirely from captured material.—M. C.

BEACH, J. R. (1947.) **Observations on veterinary medicine in China.**—*Vet. Med.* **42.** 261–262. **2077**

A veterinary school has been established at the National Lanchow University with a four-year curriculum ; this is said to be the only veterinary school in China.

A veterinary laboratory for production of sera and vaccines had been developed in Kwangsi province in 1934 but this was destroyed by the Japanese.

At present there is only one laboratory : it was built by the Japanese and is situated at Peiping.

Avianized rinderpest vaccine was brought to China by UNRRA. Plans are being made to use it but no results are yet available.—M. C.

MADISON, R. M. (1947.) **Some observations on veterinary research in Korea.**—*J. Amer. vet. med. Ass.* **110.** 229–231. **2078**

M. served with the U.S. Army Veterinary Corps in Korea and worked at the Institute for Veterinary Research of Pusan in Southern Korea. He gives an account of three important subjects which are being studied there. A disease of swine is caused by a virus which was first isolated by Ochi (1938). Losses of about 50,000 young pigs each year had occurred, some of the losses were due to swine influenza but about 20% were due to what Ochi calls "the third virus disease of swine" to differentiate it from swine influenza and swine fever. The disease causes anaemia and jaundice, is chronic in nature, and affects pigs under three months of age. The virus is very fragile and survives for not more than one hour in a refrigerator and does not survive in glycerine. It can be maintained by passage in rabbits by blood inoculation at weekly intervals. Pigs, rabbits and g. pigs are susceptible. Horses, cattle, sheep, goats, mice and fowls are not susceptible. Lesions comprise haemosiderosis in the spleen, cellular degeneration of spleen, kidney and liver, and a marked decrease in the number of erythrocytes and of haemoglobin. An immune serum from pigs is used in prevention.

The danger of spread of rinderpest from Manchuria is met by the establishment of an

immune zone along the border. 42,000–70,000 cattle are vaccinated annually. Since 1942 a rabbit virus has been used for immunization. This rabbit adapted virus was developed by Nakamura [*V.B.* **9.** 536] In the earlier rabbit passages there were no symptoms or lesions but later a characteristic reaction developed namely a rise in temperature about the second day and necrosis of Peyer's patches in the intestine. The vaccine consists of the macerated lymph nodes collected on the third day. The lymph nodes from one rabbit make 100–150 ml. of vaccine and the dose is 2 ml. per 100 lb. body weight. No preservative is used and the vaccine is viable only for three days. It is claimed that there is no danger of spread of infection from vaccinated cattle. In the case of the highly susceptible Korean cattle from 4·5–6 ml. of immune serum are injected simultaneously with the vaccine. This is not necessary for the more resistant Manchurian cattle.

For Newcastle disease a vaccine is used administered intravenously in two doses with an interval of four days between doses. The intravenous route is used to give better and longer lasting immunity. The vaccine is prepared from chick-embryo but no details are given.

—M. C.

BEVERIDGE, W. I. B. (1948.) **Veterinary education. An inaugural lecture.** pp. 40. Cambridge: University Press. 1s. 6d. **2079**

The history of the domestication of animals and of their influence on the development of civilization is briefly outlined and it is pointed out that the domestication of animals ranks with the invention of language and the cultivation of plants as one of the great early achievements of man. The growth of veterinary science is then traced with special reference to veterinary education in Europe and more especially in Gt. Britain. The separation, to a large extent, of veterinary education from the universities in England which is attributed to Coleman's influence is important and has had the result that many people educated in universities have no acquaintance with veterinary education.

The present position of veterinary education is then described and essentials of a course in veterinary science are outlined.

The position in Cambridge University since 1934 when proposals were made for a course in veterinary science is then considered. Many difficulties have been encountered but it is hoped these will soon be overcome by legislation enabling the University to grant a degree in veterinary science. It is intended that students should enter having passed the "1st M.B." examination and should read for a Natural Science Tripos before studying vocational subjects; they would spend in all six years at Cambridge.

The new school will concentrate on training for research and on the teaching of animal production as a major subject. An important function will be to train students in the methods of research especially in the basic principles and mental techniques which enable the young scientist to become an effective research worker.

—M. C.

See also absts. **1944** (food inspection).

JESPERSEN, J., HANSEN, S. H., & SKOVGAARD, H. G. (1946.) 1. Meddelelse fra Kaninkontrolstationen paa Favrholm 1944–45. **[1st Report from the Rabbit Control Station on Favrholm, 1944–45.]** pp. 62. Copenhagen: I Kommission hos Ejvind Christensens Forlag. Kr. 0·75. Items of veterinary interest pp. 10–11 & 28. **2080**

In 1943 the Rabbit Control Station was set up with the object of finding out how rabbit breeding in Denmark could be improved regarding meat and skin quality and also wool quality in Angora rabbits. Small groups of three young rabbits of 14 breeds besides Angoras were sent from 67 breeders, groups from the same breeder being caged together. Special attention was given to feeding and records kept of weights and measurements of the rabbits at various stages and of weight-increase in proportion to fodder consumption, and eventually dead weight and carcass weight, points for skin quality being also recorded. For Angora rabbits, the control period was one year, the animals being clipped on arrival at the Station and every third month and being returned to their owners after the last clipping. The influence of sex and body weight upon the amount, length and quality of wool produced was studied, and also fodder requirements per 100 g. wool produced at various body weights.

The health position among Angora rabbits was good, the mortality being only 5·3%, the cause of death being mainly enteritis. Among the other breeds it was unsatisfactory, there being a mortality of 26%. Of the cases examined P.M., about two-thirds had coccidiosis of either intestine or liver, or of both. A form of gastro-enteritis not caused by coccidia was also common. The mortality percentage was evenly spread over groups from different farms.—F. E. W.

LIVESTOCK HYGIENE

See also abst. **2102** (dairy detergents).

REPRODUCTION AND REPRODUCTIVE DISORDERS

JEAN-BLAIN, M. (1947.) L'insémination artificielle. **[Artificial insemination. [French developments.]**—*Rev. Méd. vét. Lyon et Toulouse.* **98.** 1–16. **2081**

This article contains no new information, being a comprehensive review of artificial insemination methods and organization at the Cambridge Centre and the Cornell University Centre, U.S.A. —A. M. LOOSMORE.

HINDMARSH, W. L., & FARKAS, R. (1945.) **Artificial insemination of cows.**—*Aust. vet. J.* **21.** 95–99. **2082**

Details of the experimental stages in the development of an artificial insemination centre at Glenfield Research Station are given. Following a brief discussion of the value of artificial insemination, comment is made on the general management of the centre. The number of bulls retained had to be sufficient to permit periodical resting. When handled quietly, bulls very quickly became accustomed to the conditions of service. It was doubted whether the number of cows inseminated from one bull per year would reach the level (1,000) mentioned in the overseas reports. This was due to the small number of cows available for insemination.

Semen was collected in a locally made artificial vagina, of which the inner rubber sheath was too thick and stretched considerably, inhibiting ejaculation. Semen was diluted with egg yolk buffer solution (1 : 3, 1 : 4 or 1 : 5), divided into 1 ml. doses, and stored under paraffin at 4·5°C. Original activity was maintained for three days. Inseminations were made into the cervix up to a depth of 1–2 in.

Because of the necessity of keeping a careful check on the genital health of the herds to be inseminated, it was considered essential that a veterinarian should be associated with an artificial insemination centre, even if actual inseminations were carried out by technicians.

If costs to the farmer were found to be comparable to those reported from overseas (£67 per 40 cows) it was considered that, as a means of grading up the smaller dairy herds, artificial insemination would not be widely adopted in New South Wales, unless the Government bore a considerable portion of the cost, an undertaking considered to be justifiable. Records of the cost of running the scheme were being kept. During the experimental stages the service was being provided free to the farmers.—C. S. SAPSFORD.

DAVISON, W. F. (1947.) **The control of ovulation in the mare with reference to insemination with stored sperm.**—*J. agric. Sci.* **37.** 287–290. **2083**

Rectal examination of the ovaries of Shetland pony mares in oestrus were conducted to determine the condition of the developing follicles, as judged by the thickness of the enveloping wall. 500 I.U. of pregnancy urine extract was injected intravenously when the follicles were ripe, followed 24 hours later by artificial insemination using semen stored for 24 hours. Records of the results of inseminations of 23 mares are tabulated, as are summaries of the time of ovulation after injection on different days of oestrus and the time after ovulation that heat ceased. In three cases ovulation occurred within 24 hours of injection, 19 more within 24–48 hours after, and one not until between 4–5 days after. An average of 698 million spermatozoa were used to inseminate those animals which became pregnant.—G. L. BAILEY.

I. SWYER, G. I. M. (1947.) **The hyaluronidase content of semen.**—*Biochem. J.* **41.** 409–413. **2084**

II. SWYER, G. I. M. (1947.) **The release of hyaluronidase from spermatozoa.**—*Biochem. J.* **41.** 413–417. **2085**

I. There is evidence that the hyaluronidase of semen denudes the ova of surrounding follicle cells thus facilitating penetration and syngamy. S. estimated the concentration of hyaluronidase in specimens of semen from various species (58 human, 6 boar, 11 rabbit, 5 bull, 7 dog and 10 fowl). The semen from boars had been stored after freeze drying. In all cases but those of the fowl and the dog there is a strong positive correlation between density of spermatozoa and hyaluronidase concentration in units per ml. There is no hyaluronidase in cryptorchid or prepubertal rabbit testes and S. concluded that seminal hyaluronidase originates in active seminiferous epithelium and is not secreted by the accessory glands. There is very little hyaluronidase in dog semen and there is no correlation with density of spermatozoa. Only four of the specimens from fowl contained any hyaluronidase, and in those the concentration was very low. This accords with the fact that there are no cumulus cells round the egg of fowls.

II. Using rabbit semen S. found that all the hyaluronidase can be extracted from spermatozoa by freezing for a short time or suspension in water at 0°C. for 24 hours. Freeze drying results in an insignificant loss of potency. In Baker's solution the amount of hyaluronidase in solution is roughly proportional to the logarithm of the volume of the suspension for a constant number of spermatozoa. In semen at least three-quarters of the hyaluronidase is associated with the spermatozoa, the remainder being in the plasma ; the presence of the enzyme in solution in the plasma reducing

the amount liberated by the spermatozoa. It is suggested that the relation between the volume of the suspension and the hyaluronidase liberated is sufficient to account for the release of the enzyme in the Fallopian tubes.—ALAN A. WILSON.

SWANGARD, W. M. (1947.) **The hormonal relationship of the anterior pituitary gland and the gonads.**—*Canad. J. comp. Med.* **11.** 193–202. **2086**

The gonadotropin-like hormones do not correct anterior pituitary deficiencies. Oestrogens will only in rare cases cure infertility. They re-establish only secondary sexual symptoms such as oestrus and mammary development, and in large doses may produce pituitary shock and sterility. The possibility of pituitary stimulation by mild continuous oestrogen or androgen administration requires further clinical investigation. Androgen administration must be held to moderate dosage on account of possible pituitary "shock" and eventual peripheral side effects. The anterior pituitary hormone can be relied upon to restore the sexual cycle with resulting fertility and recurrence of primary and secondary sex function in most cases of true glandular insufficiency within the cycle, but this may not hold true after previous administration of excessive doses of androgens or oestrogens.—R. GWATKIN.

SCHOCKAERT, J. A., & FERIN, J. (1941.) Efficacité de divers corps oestrogènes administrés par la voie orale, chez le femme ovariectomisée. [**Efficacy of various oestrogens administered orally.**]—*Acta biol. belg.* **1.** 345–348. **2087**

The authors studied the effect of administering *per os* oestradiol, oestrone, oestradiol benzoate and stilboestrol, separately, to ovariectomized women all found by biopsy to have atrophied endometria before treatment and determined the dose required to obtain endometrial proliferation similar to that seen during the developing follicle stage in normal women. Four women of various ages were treated at various times with the oestrogens. The authors conclude that all these substances were absorbed when administered *per os* and were capable in relatively small doses of causing development of the endometrium. The dose required varied, however, with the degree of uterine atrophy. Oestradiol benzoate was more active than oestradiol and nearly as active as stilboestrol. Oestrone and oestradiol had about the same activity. In view of its pharmacological advantages, stilboestrol is the best substance for oral administration.—ALAN A. WILSON.

WOLFF, E., & WOLFF, E. (1947.) La différenciation sexuelle du tubercle génital et son déterminisme chez le canard. [**The differentiation of the genital tubercle in ducks.**]—*C. R. Soc. Biol. Paris.* **141.** 916–917. **2088**

Of the species of birds possessing a copulatory organ, the Khaki Campbell duck was chosen for an investigation of sexual differentiation in the genital tubercle. Until the fifteenth day of incubation no differentiation was noted, but from this time onwards the tubercle in the female was found to regress and form a rudimentary structure comparable with a mammalian clitoris, which may be present in the adult—whereas development continued in the male.

Oestrogenic hormones injected during the 5th–7th day of incubation effected almost complete regression of the tubercle in both sexes, while androgenic hormones encouraged the development of a penis in female embryos which by the 21st day of incubation had dimensions almost equal to those of the normal male.

—C. W. OTTAWAY.

ZIMMERMANN, G. (1944.) Hermaphroditismus als Ergebnis eines intersexuellen Umwandlungsprozesses. [**Hermaphrodism as the result of intersexual metamorphosis.**]—*Arch. wiss. prakt. Tierheilk.* **79.** 320–327. **2089**

Z. compares the origin of hermaphrodism with intersexual metamorphosis, during embryonic and post-foetal development. In P.M. examination of the uro-genital organs of a pig six months old there were apparently normal external female sex organs, apart from a protrusion on the left side containing a testis which was in connection with an ovary. The following male characters were evident, the processus vaginalis, the spermatic cord, the descensus of left cornum uteri and the scrotum.

In a goat one and a half years old with external male characters, two scrota containing testes and a clitoris of nearly the size of a penis was present. The urethra was characterized by the raphe perinei not running through the penis; a natural orifice was absent. The initial stages of the urethra were male in formation which later proceeded to female. The development of both the Wolffian and Mullërian ducts are described.—P. S.

HAMMOND, J. (1947.) **Animal breeding in relation to nutrition and environmental conditions.**—*Biol. Rev.* **22.** 195–213. **2090**

Since the action of the genes on the characters of an animal is limited to those manifestations which are physiologically possible if the gene is to survive, it follows that environmental conditions have a selective action. In animal breeding selection of genes for higher levels of production is made possible by placing the animals under optimal conditions for the development of the character in question.

The selection for high milk yields in a tem-

perate climate is not applicable to tropical climates for under temperate conditions there has been no selection for factors regulating body temperature at high atmospheric temperatures. In a tropical climate genes for this latter character must be combined with genes for high production before these can become effective.

Control of the plane of nutrition is important in selecting genes for meat production as nutrition controls the body proportions.—M. C.

DIMOCK, W. W., EDWARDS, P. R., & BRUNER, D. W. (1947.) **Infections observed in equine fetuses and foals.**—*Cornell Vet.* **37.** 89–99. **2091**

This paper summarizes the results obtained in Kentucky from the P.M. examination of 1,150 aborted equine foetuses and 875 foals examined between the years 1921 and 1946. The term foetus is used to denote any specimen born dead more than two weeks prematurely. Any specimen alive at birth, provided that it was not more than 30 days premature, or which was born dead within two weeks of the end of the normal gestation period was classified as a foal.

Of the foetuses, 26·00% were infected with equine virus abortion [see *V. B.* **13.** 283], 17·04% with streptococci (Lancefield group C), 1·91% with *Salmonella abortus-equi* and 2·52% with other organisms. The cause of death was not determined in 38·26% and twins, torsion of the cord and anomalies accounted for the remaining 14·25% of cases.

In the foals, *Bacterium equirule* was responsible for 30·40% and streptococci for 25·71% of deaths. Infection with other bacteria occurred in 10·97% and with the virus of equine abortion in 0·57% of cases. No infection was found in 32·3%.

Abortions due to the virus of equine abortion usually occur in well-defined outbreaks. Pregnancy is terminated generally from after the eighth month to the time of normal parturition. Abortions caused by streptococci are commonly found between the third and sixth months and *S. abortivo-equinus* usually produces abortion between the sixth and ninth months.

Infection with *Bact. equirule* and with streptococci may occur either before or after birth. In the absence of other infections, these organisms were encountered only in sporadic cases.

An excellent, brief account of the clinical and pathological findings in the different conditions causing mortality in foals is given and the original should be read by all interested in this important subject.—J. RICHARD HUDSON.

See also abts. **2081-2085** (artificial insemination).

TARR, A. (1947.) **A note on the occurrence of puerperal haemoglobinaemia of cattle in South Africa.**—*J. S. Afr. vet. med. Ass.* **18.** 167–168. **2092**

T. records the occurrence of puerperal haemoglobinaemia in several districts round Pietermaritzburg, Natal. All the cases occurred in the winter, the symptoms appearing 2–3½ weeks after calving. The symptoms noted were haemoglobinuria, slight fever, icterus, anorexia and decrease in milk yield. Blood smears were negative for piroplasms, all the cases recovered without specific treatment for piroplasms, and only post parturient cows were affected.

In mild cases the exclusion of root crops from the diet was sufficient to lead to recovery. Severe cases were treated by the intravenous injection of glucose, blood transfusion, and later the intramuscular injection of camphorated oil, and dosage with strong black coffee.—U. F. RICHARDSON.

STAFFE, A. (1947.) Zur Frage der Rassenzwerge bei Haustier und Mensch. **[Dwarfism in domestic animals and man.]**—*Schweiz. Arch. Tierheilk.* **89.** 443–459. **2093**

In 1935 S. spent some months in Africa and details some characteristics of the Balundu pygmies and refers to dwarfism in domestic animals. S. recalls reports of the alleged presence of dwarf wild animals in the same region—dwarf elephants, rhinoceros, antelope, poultry, and in seeking a possible common cause of such mutation, puts forward a tentative hypothesis of photosensitized gene mutation aided by increased porphyrin supply to the generative glands arising from factors of local nutrition.—C. AHARONI.

ZOOTECHNY

GAALAAS, R. F. (1947.) **A study of heat tolerance in Jersey cows.**—*J. Dairy Sci.* **30.** 79–85. **2094**

The author describes the variations in heat tolerance in a herd of Jersey cows under normal conditions over a period of five years, the heat tolerance coefficient being calculated from the body temperature. Very little change occurs in the average heat tolerance of the herd from year to year, but there is a definite difference in heat tolerance in different age groups amongst young cattle. At the age of four years and over, the heat tolerance coefficient remains stable for the individual. Lactation and gestation have no effect on the heat tolerance coefficient, and the differences in heat tolerance between groups of daughters of various sires are only demonstrable in young cattle, disappearing at about four years of age.

—MARY C. LOBBAN.

SEATH, D. M., & MILLER, G. D. (1946) **Effect of warm weather on grazing performance of milking cows.**—*J. Dairy Sci.* **29.** 199–206. **2095**

Observations were made on three Jersey and three Holstein cows during the summer. There was a progressive rise of body temperature during the day from an average of 101·7°F. at 5.45 a.m. to 103·5°F. at 3 p.m. and of atmospheric temperature during the same period from 73°–86·7°F.

During hot weather the cows grazed more at night than during the day. The experiments suggest the need for good pasture at night.—M. C.

KLIGLER, I. J., GUGGENHEIM, K., & SCHWARTZ, I. (1945.) **Adaptation to changes in environmental humidity at constant temperatures.**—*Proc. Soc. exp. Biol., N.Y.* **58.** 286–289. **2096**

The effect of sudden changes in relative humidity, at constant temperatures, on water intake and on the urine, Cl and N excretion of rats was studied. The methods used are described. When rats acclimatized to a dry atmosphere were transferred to a humid one there was a significant increase in the excretion of urine, Cl and N. There was no increase in water intake. On the other hand rats acclimatized to a humid environment consumed about 19 % more water after being transferred to dry cages. The reaction was not shown by thyroidectomized rats and it was concluded that a change from a dry to a humid environment activates the thyroid gland.—M. C.

DUGAL, L.-P., & THÉRIEN, M. (1947.) **Ascorbic acid and acclimatization to cold environment.**—*Canad. J. Res.* Sect. E. **25.** 111–136. [French summary.] **2097**

Ascorbic acid increased in amount in the liver, kidney and testes of white rats after prolonged exposure and adaptation to low temperatures (+4° to – 4°C.). The increase of ascorbic acid is lower when the ration is fortified daily with that vitamin. With rats unable to adapt themselves to cold there is a decrease of ascorbic acid in the above-mentioned tissues. The authors believe the above results indicate that a large quantity of ascorbic acid is required by the white rat to become acclimatized to low temperatures. The belief was fortified by the fact that in g. pigs which do not synthesize ascorbic acid, resistance and adaptation to low temperatures depend on the amount of ascorbic acid taken daily. Also that during the adaptation period more ascorbic acid is retained in the tissues of g. pigs that are exposed to low temperature than in control animals kept at room temperatures. There was also a direct relation between adaptability to cold environment and the amount of ascorbic acid in the adrenal glands.

—P. J. G. PLUMMER.

PHILLIPS, R. W. (1947.) **Animal husbandry in China and India.**—*J. Anim. Sci.* **6.** 203–210. **2098**

Numerical comparisons are made between the numbers of livestock kept in India and China and those in the U.S.A. In intensively cultivated China many equines are kept for transport, but few cattle. In India many cattle are kept for transport and milk but few equines. The disposal of worn out cattle is a problem. Both countries keep many goats, India has many sheep in grassland areas and China has them in the mountain areas. Sheep and yaks provide Tibetan nomads with meat, milk and clothing. Yaks and yak cattle hybrids are kept in mountains and in valleys according to the season. Camels graze the mountain pastures in summer. For religious reasons there are few pigs in India. In China they are numerous.—A. G. WARREN.

NORDQUIST, A. V. (1946.) **Estimating livestock losses.**—*Proc. 50th ann. Meet. Live Stk sanit. Ass., 1946.* pp. 199–208. **2099**

From this article it would appear that the correct assessment of livestock losses in the U.S.A. is no easy matter. For many years, however, the Department of Agriculture has published estimates of livestock losses. To make a production estimate for a given species of livestock it is necessary to know the numbers at the beginning and end of the year, the number of imports and births during the year, and the numbers sold, slaughtered by farmers or that died during the year.

There is no independent information on livestock losses. Losses, therefore, must be estimated from information obtained from surveys of livestock producers without benefit of independent data that can be used as a check. Balance sheets for livestock are prepared by States for each species. For some States there is a wealth of independent check information on market receipts, births, inshipments and slaughter. For some States the records of livestock movements are fairly complete because marketing patterns by States of origin are easily traced and records of these movements easily obtainable. In other States the pattern is more complex and it is difficult, if not impossible, to trace the livestock movements.

Tables are included for the States of Missouri and Wisconsin showing the losses from disease, predators and other causes, of the different types of cattle, sheep, pigs and poultry and other tables showing the annual estimates of death losses for the U.S. by regions, such as the death loss per thousand head and the death rate per thousand head for the years 1941 - 45, for horses and colts, mules and mule colts, cattle, calves, pigs, sheep and lambs.—S. RABAGLIATI.

TECHNIQUE AND APPARATUS

SHROPSHIRE, R. F. (1947.) **Turbidimetric evaluation of bacterial disruption by sonic energy.**—*J. Bact.* **53.** 685–693. [Author's summary and conclusions copied *verbatim.*] **2100**

A method is submitted for the turbidimetric evaluation of bacterial disruption by sonic energy that seems to have a high degree of reproducibility.

This method appears sensitive to comparatively small changes in either the device which applies sonic energy to the liquid under treatment, or changes in the quantity of liquid or time of treatment of the material.

This method is independent of the instrument used for the measurement of turbidity, because of the fact that the findings are recorded in terms of the absorption coefficients multiplied by a constant.

JOHNSON, A. F. (1947.) **Quantitative study of the Hilsch heat separator.**—*Canad. J. Res.* Sect. F. **25.** 299–302. **2101**

The apparatus described in this paper as a "heat separator" is a device for producing cold by the separation of a high velocity gas vortex into cold and warm streams. Data concerning its construction, performance and possible uses are given. It is a simple and inexpensive apparatus and can be a useful refrigerating agent for laboratory and other purposes where compressed air supplies are available and where more elaborate refrigeration machinery may not be economical.
—J. W. PULLIN.

FOUTS, E. L., & FREEMAN, T. R. (1947.) **A device to aid in determining the effectiveness of dairy detergents.**—*J. Dairy Sci.* **30.** 61–63. **2102**

The apparatus, designed to test the efficiency of detergent powders used in cleaning dairy utensils, consists of a bicycle wheel mounted in a pivoted frame which permits of vertical movement, revolved by an electric motor; it is geared to run at 7 r.p.m. Evenly spaced around the rim of the wheel are 18 numbered clips each to hold a 3 × 1 in. glass microscopic slide. Milk smears are made on one side of clean slides and dried on in an oven for three hours at 120°C. These slides are placed in the numbered clips around the rim of the wheel. The water to be tested, four litres maintained at 50°C., has a weighed amount of the test detergent powder added and is then poured into the trough into which the wheel is lowered. When the wheel is revolving the slides after passing through the solution rub against a rubber brush. As the slides become clean they are removed from the clips and a record is made of the number of revolutions required to remove the film on each slide. The average number of revolutions required to clean the 18 slides is determined. An average of three runs (54 slides) is accepted as accurate. This data serves to calculate the "soil removal index."—J. A. G.

BARNETT, H. L., & FELLERS, F. X. (1947.) **A simple quantitative method for intravenous injection of small volumes of fluid.**—*Science.* **106.** 401–402. **2103**

Two glass syringes and a metal three-way stopcock are used. The solution to be injected is pipetted into the upright syringe barrel and after injection the barrel can be filled with saline and washed through as often as desired. Advantages claimed are: (1) measurement from a pipette is more accurate than from a syringe; (2) several solutions can be measured and given in a single injection and (3) rinsing out is done with saline instead of with blood.—M. C.

ANDREWS, F. N. (1945.) **A tissue basket for paraffin infiltration.**—*Stain Tech.* **20.** 119–120. **2104**

To avoid the hardening of the paraffin when the infiltration and embedding pots are removed from the oven, or when the oven cools from being too frequently opened, A. recommends, and gives instructions for making, gauze baskets which can be mounted five or six at a time in embedding baths.—L. M. MARKSON.

LIEB, E. (1947.) **Permanent stain for amyloid.**—*Amer. J. clin. Path.* **17.** 413–414. **2105**

The stain used is an acidified solution of crystal violet, which differentiates as it stains. This, however, is only incidental. The permanence of the stain is obtained by mounting the stained section in an aqueous solution of "abopon", a water-soluble, synthetic resin.
—L. M. MARKSON.

BURDON, K. L. (1946.) **Fatty material in bacteria and fungi revealed by staining dried, fixed slide preparations.**—*J. Bact.* **52.** 665–678. **2106**

A technique is described by which intracellular lipoid can be stained in micro-organisms by applying Sudan black B to dried preparations. The stain has been applied to all the chief species of bacteria and to many fungi. It was of special interest to note that closely related bacteria showed great similarity in appearance when stained for fatty material and that their content of these substances was nearly alike. It was observed that fatty material is found more regularly and in greater abundance in Gram-positive than in Gram-negative bacteria. The lipoid material was found in stock cultures, in primary cultures as well as in material from which cultures were obtained. The author points out that the value of the fat-staining method as an aid in the

differentiation of species has still to be explored. —E. KLIENEBERGER-NOBEL.

GILL, D. A., & PARRISH, E. (1945.) **Microphotography as an aid to the identification of trombiculine larvae [with six plates].**—*J. Coun. sci. industr. Res. Aust.* **18.** 298–300. **2107**

The use of photomicrography of the whole mite and of its dorsal scutum is recommended as an aid in the identification of trombiculine mites. The difficulties encountered in identifying mites from drawings, descriptions and measurements are discussed. There are twelve photomicrographs which illustrate their value in depicting the finer details of structure. The methods used are described in detail. Oblique lighting was used to great advantage.—H. McL. GORDON.

SAURER, H. (1947.) Beitrag zur Photographie des Augenhintergrundes bei Haustieren. **[The photography of the fundus of the eye in domestic animals.]**—*Schweiz. Arch. Tierheilk.* **89.** 199–203. **2108**

It is possible to photograph the fundus of the eye with an ordinary camera, because light leaves the pupil of an emmetropic eye in parallel rays. The camera is focused at infinity and the source of light is a small lamp connected with a three-volt battery. The eye is treated with atropine and the photograph is taken in darkness. The exact distance between the camera and the head of the animal is arranged by means of the viewfinder and the photographic plate is given 0·1–1 sec. exposure, f : 6.

The eye of the horse is difficult to photograph owing to the horse's dislike of the apparatus being brought near and the rapid movements of its head. Photographs of the fundus in cattle, sheep and pigs are easier to take, but best results are obtained with the dog. Six actual photographs and diagrams are given in the paper.—C. AHARONI.

REPORTS

ANON. (1947–48.) **Fifth report from the Select Committee on Estimates together with the minutes of evidence taken before sub-committee B and appendices. Session 1947-48. Colonial development.** pp. lxxvi + 505. London: His Majesty's Stationery Office. 18s. Items of veterinary interest pp. xxxiii, xxxiv, xxxvi, 92–93, 346–348, 377–379 & 388–400. **2109**

The report is in two parts, namely, the report proper and the minutes of evidence given before the committee. The committee visited Nigeria and took evidence at a number of places, the witnesses including veterinary and agricultural officers. There is a great deal of general interest as well as much of specific veterinary interest. As a result of their enquiries the committee made 35 recommendations, among these being the following:– The limited number of fully qualified technicians available should concentrate on training local staff for technical positions; schemes should be adopted for the recruitment into the forestry, agricultural and veterinary services of men without academic qualifications but of good personal qualities and natural aptitude. Such schemes should provide for their academic training at a later stage.

Some of the points dealt with in the evidence are the educational value of the work done by veterinary departments in helping to establish standards for hides and skins; proposals for establishment of a centralized abattoir; trypanosomiasis as an obstacle to the development of mixed farming; new chemotherapeutic agents for treatment of trypanosomiasis; the shortage of trained staff—there are 51 unfilled posts in the Colonial Veterinary Service; the training of Africans as veterinary surgeons; and many others. In a memorandum submitted by the Director of Agriculture it is stated that contagious abortion is an important factor in retarding the improvement of cattle in Nigeria.—M. C.

BOOK REVIEWS

MERCHANT, I. A. [D.V.M., Ph.D., C.P.H.; Professor of Veterinary Bacteriology and Head of the Department of Veterinary Hygiene, Division of Veterinary Medicine, Iowa State College]. (1946.) **Veterinary Bacteriology.** pp. vii + 683. 137 figs., 19 tables. Numerous refs. Ames, Iowa: Iowa State College Press. 3rd Edit. $7.00. **2110**

A reliable and readable textbook dealing with the important characteristics of the bacteria and viruses pathogenic for livestock. In size this edition is no larger than the average textbook, yet the author has successfully dealt with systematic bacteriology, practical methods, history, the physiology of micro-organisms and with antibiotics, and other matters together with a comprehensive and lucid section on the mechanism of infection and the principles of immunity. Numerous photomicrographs of good quality add to the value of the text, and each of the 42 chapters has a useful list of references as a guide for further study.

The strong binding and excellent printing

combined with the above-mentioned features, ensure that the book will be an asset both in teaching and research work.—J. KEPPIE.

BERTHELON, M. [Professeur a l'Ecole Nationale Vétérinaire de Toulouse]. (1947.) Les brucelloses animales. **[Brucellosis in animals.]** pp. 217. 3 figs. Villefranche-de-Rouergue: Imprimerie Salingardes. Fr. 312. **2111**

The book is divided into two parts the first of which deals with the bacteriology, differentiation and pathogenicity of the members of the brucella group. The second part has six chapters dealing with brucellosis in cattle; in small ruminants; in swine; in horses; in other animals; and in man. Each of these chapters treats its subject under the headings history, epidemiology, aetiology, pathogenicity, clinical features, progress, diagnosis, treatment and prevention. The whole constitutes an excellent textbook particularly in respect of the history of the stages in the development of present-day knowledge. There is an extensive bibliography particularly of the earlier references, but the more recent literature is incomplete as comparatively few of the references are of dates later than 1940.

—M. C.

Diseases of poultry. (1948.) Edited by BIESTER, H. E. (Professor of Veterinary Research & Assistant Director Veterinary Res. Institute, Iowa, State College), & SCHWARTE, L. H. (Professor of Veterinary Research, Veterinary Research Institute, Iowa State College). pp. xiii + 1154. Ames, Iowa: Iowa State College Press. 2nd edit. **2112**

This second edition is on the same lines as the first, there are still 40 chapters but the pages have been increased in number and some new names occur in the list of contributors.

Newcastle disease is dealt with in chapter 21 headed avian pneumo-encephalitis (Newcastle disease) and fowl plague in chapter 26 under the heading fowl pest. Only the milder or American form of Newcastle disease is described, those who require a description of the virulent form occurring outside the U.S.A. are referred to the review of the literature on Newcastle disease by Beaudette. It would make for easy reference if Newcastle disease and fowl plague, diseases which have so many features in common, were dealt with in consecutive chapters and if a full description of the virulent type of Newcastle disease was included.

A perusal of the book impresses one with the increasing complexity of the virus diseases of poultry. The following are described in separate chapters: infectious bronchitis, laryngotracheitis, Newcastle disease, fowl plague, psittacosis, avian encephalomyelitis, and equine encephalomyelitis virus in fowls; these are seven distinct conditions, all having points in common, and which can be differentiated from each other only by means of quite elaborate laboratory procedures. One is tempted to speculate as to why the domestic fowl should have such a plethora of virus infections as compared with the various species of domestic mammals. Does the reason lie in the extremely intensive methods of hatching, breeding and housing fowls which have been developed in recent years or may it be that fowls have much greater opportunity for contracting infections from their wild relations than have the domestic mammals?

Research workers and those concerned with control and eradication problems, especially workers in the U.S.A., will mark this book as a necessity. A feature of the work is the number and clarity of the photographic illustrations.

—M. C.

MCCOLLUM, E. V. [Ph.D., Sc.D. Emeritus Professor, School of Hygiene & Public Health, Johns Hopkins University], & BECKER, J. E. [M.A. Assistant Professor Biochemistry, School of Hygiene & Public Health, Johns Hopkins University]. (1947.) **Food, nutrition and health.** pp. v + 146. Baltimore: E. V. McCollum & J. E. Becker, Johns Hopkins University. 6th Edit. $2. **2113**

This little book deals with human nutrition. Energy requirements, the vitamins, mineral elements and foods of vegetable and of animal origin are dealt with. Nutrition in general is discussed and what can and cannot be accomplished through diet. An account is given of the significance of recent scientific developments in this field.—E. M. J.

GILL, G. H. [A.M.I.M.E.]. (1947.) **Dust and its effects on the respiratory system.** pp. viii + 50. London: H. K. Lewis & Co., Ltd. 15 illus. 5s. **2114**

This booklet has been prepared in order to provide industrial managers and others who may have to combat the problem, with a general outline of the effects of dust on the respiratory system. It is based on the numerous investigations which have been carried out by the Medical Research Council.

After a brief description of the underlying principles of respiration and the physiology of the lung, the pathological changes due to dust inhalation are described. Most attention is given to silica and silicosis, asbestosis and cardroom dust. The technique for assessing the number of dust particles in the atmosphere is described.—J. A. N.

BRETSCHNEIDER, L. H., & DE WIT, J. J. D. (1947.) **Sexual endocrinology of non-mammalian vertebrates. [Monograph on the progress of research**

in Holland during the war.] pp. 146. New York, London, Amsterdam & Brussels: Elsevier Publishing Co., Inc. 15s. **2115**

The first section is concerned with the use of the bitterling (*Rhodeus amarus*), a fish, as a test animal in assays of mammalian hormones. It was introduced for this purpose by Fleischmann and Kahn in 1932, growth of the ovipositor occurring when oestrogens were injected or added to the water in the aquarium. Subsequent investigations in Europe and the U.S. revealed that androgenic and progestogenic steroids and hormones of the adrenal cortex could also evoke lengthening of the ovipositor. Because of this lack of specificity, it appeared that the bitterling would be of little value as a test animal in endocrine studies. The authors found, however, that the rate of growth of the ovipositor was characteristic for the various classes of steroid hormones and that the ovipositor test could be used with advantage for hormonal assays, provided certain conditions were observed, the reaction being particularly suited for assaying small quantities of progesterone, *e.g.*, in a single bovine corpus luteum.

The action of mammalian hormones on the bitterling ovipositor were found to be indirect. The steroids stimulate the production of a gonadotropic hormone by the anterior pituitary, which in turn causes corpora lutea to develop in the ovary; a hormone, "oviductin", produced by the corpora lutea, stimulates the growth of the ovipositor. The sexual endocrinology of the bitterling was extensively investigated and is described in the last three sections of the monograph in which the pituitary-ovary-ovipositor relationship, the endocrine functions of the ovary and the sex cycles in non-mammalian vertebrates are discussed.

Working under most difficult conditions, the authors have made an important contribution to a highly specialized field of endocrine study.

—ALFRED T. COWIE.

WOLCOTT, R. H. [Late Professor of Zoology, University of Nebraska], & POWELL, E. F. [Assistant Professor of Zoology, University of Nebraska]. (1948.) **Laboratory guide in animal biology.** pp. ix+113. New York, Toronto & London: McGraw-Hill Book Company, Inc. 2nd Edit. 9s. **2116**

This book is obviously designed to develop the powers of observation of those working under close supervision and as such deserves praise. The microscope is illustrated and labelled but the instructions for its use could have been enlarged with advantage. The selected types of animal life are superficially described and pass from tissues to embryogeny, from mitosis to oogenesis, resulting in a lack of balance.

It seems curious that a representation of the Porifera should have been included in an elementary textbook while the Trematoda have been omitted, that four members of the Coelenterata are considered and only two Arthropoda. The usual Acrania and lower Craniata types namely *Amphioxus* and a fish are not considered. The higher Craniata are represented only by the sole example of the frog.

Textbooks of animal biology (which is surely the study of *living* animals) are frequently dissertations on the dead and the various organic systems of the dead. We agree that comparative morphology is an essential instrument to the teaching of zoology and that it should never lose its place in the curriculum—but why divorce it from function of which it is so often an expression? How often has a devout follower of Gilbert White and Jeffries been utterly disillusioned by his experience of elementary academic zoology?

This book is of merit in that the student is encouraged to observe the behaviour of the living animal: its locomotion, responses to mechanical stimulation, moisture, light, etc. It is doubtful whether its somewhat limited scope would adequately cover the syllabus of a first year zoology course in a British university.—C. H. S.

FIELD, E. J. [M.D., M.S.; Lecturer in Anatomy in the University of Bristol], & HARRISON, R. J. [M.A., M.B., B.Chir.; Lecturer in Anatomy in the University of Glasgow]. (1947.) **Anatomical terms: their origin and derivation.** pp. xvi+165. 18 refs. Cambridge: W. Heffer & Sons. 7s. 6d. **2117**

In these days of early specialization, when the average student of scientific subjects has only moderate Latin and no Greek, the need for such a book as this becomes increasingly apparent.

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